

THE RURAL INDUSTRIES OF ENGLAND & WALES

A SURVEY MADE ON BEHALF OF THE
AGRICULTURAL ECONOMICS
RESEARCH INSTITUTE
OXFORD

I

TIMBER AND UNDERWOOD
INDUSTRIES AND SOME
VILLAGE WORKSHOPS

By

HELEN E. FITZRANDOLPH
and M. DORIEL HAY

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PREFACE

IN any consideration of the development of the countryside the place and function of local industries in rural life must occupy a prominent position. Their importance in the past is obvious, when the village was largely an isolated economic unit ; in view of the part they might still play in maintaining a fuller life for the country dweller, in stemming the flow of population from the rural to the urban centres, and in solving some of the problems of modern industrialism, the need for a study of their present state, of the extent to which the changes in modern, social, and economic conditions demand their supersession, and of the possibility of adapting and developing them to serve these same conditions, becomes increasingly apparent.

It may be that rural industries can continue to supplement agriculture in the complete rural community, by providing subsidiary employment for the part-time land-worker and the small-holder ; by affording the chance of employment in their own homes or villages to the various members of their families ; by providing certain requisities of agricultural industry. It may be possible that in the revolution of economic principles and systems which is now being made by all sorts and conditions of persons, certain human advantages in rural industries may be set against the greater production of goods by the larger industrial units of the towns. In particular, the smaller industrial concern enables a man to see the whole series of connexions between the making and using of an article, and brings his work into direct relation not only with his own life, but with that of the community of which he is a member. There is little or no distinction between producer and consumer and one of the chief causes of present social conflicts is non-existent. The worker in the country 'sees the nature of what he is doing ; he is getting products from the land and making use of them by

industry. He sees the whole process, and the fact is plain that labour and land are for the sake of himself and others like him who needs the goods. He sees the grain become flour, the wood from the forest become furniture, the hide become leather, and the leather boots, and the wool cloth—all beside him, and all of it a plain process of natural goods made useful by men.' ¹ The men of the towns, however, have a genius for organization, and if it be necessary that their business should be arranged on a basis involving less specialization than at present, or so that some of the evil effects of over-specialization were eliminated, they may be able to modify existing systems without seriously affecting their productivity. The only basis upon which rural industries can be firmly established is that of a high standard of technical knowledge and skill, suitable machinery, and commercial organization. On the other hand, the moribund condition of many once-flourishing country trades and crafts may have to be recognized as the price of industrial progress in other centres. The modern tendency towards the centralization of industry and large-scale production; the enormous development of transport facilities which has broken down the barriers between town and country; the danger of these small unorganized enterprises becoming sweated industries serving only to subsidize agricultural wages, all of these things may render undesirable any effort towards the resuscitation of many of these ancient crafts.

With so little knowledge available it became clear that a thorough investigation of the position of rural industries, both economic and social, would be advantageous and, in 1919, at the suggestion of the Development Commissioners, an inquiry into the condition of rural industries in the neighbourhood of Oxford was set on foot by the Agricultural Economics Research Institute, at Oxford. It was rather of the nature of a trial trip, an experimental inquiry to explore the possibilities of a more complete investigation, and in the following year arrangements were made with the Development Commissioners and the Ministry of Agriculture

¹ D. H. Macgregor, *The Evolution of Industry*, p. 24.

for an extension of the survey so as to bring under review the principal rural industries of England and Wales.

The terms of reference to those responsible for the work were to consider—

(1) the existing rural industries and the causes of their establishment in particular localities, such as easy access to local supplies of raw material and labour, and local markets for the finished products ;

(2) the various types of organization in these industries, such as small factories and workrooms or individual production, organizations for the purchase of raw materials or the sale of finished products. Educational facilities and the possibilities of technical instruction were also to be borne in mind in this connexion ;

(3) the economic and social effects of rural industries, the conditions of labour attendant on them, the connexion between rural industries and agricultural employment, and how far such industries tend to depress or to ameliorate the lot of the agricultural worker ;

(4) the prospects of development of existing industries and of the introduction of new enterprises, or of the resuscitation of former industries now dead or in a state of suspended animation. In this connexion the existence of competition, both urban and foreign, was to be borne in mind, and consideration given to the conditions under which rural industries can compete with urban production.

The survey was carried out during three years by a specially appointed group of workers. They surveyed the country, county by county, and the results of their inquiries were embodied in reports dealing with the industries of particular localities. From these interim reports (which are available in manuscript, for consultation, at Oxford) the final reports were compiled, dealing with the various industries separately as they occur throughout the country.

As has already been said, the first district surveyed was that of Oxfordshire, and the investigator in this instance was Miss K. S. Woods, who was assisted in part of the work by Miss C. D. Biggs. The results of the survey were

embodied in book form, and published early in 1921.¹ From 1921 to 1922 the work was continued by Miss Woods and Miss Helen FitzRandolph, and in the summer of 1922 Miss M. Doriel Hay took Miss Woods's place. The survey of the Welsh industries required a knowledge of the Welsh language and was undertaken, apart from the English survey, by Miss A. M. Jones, in 1922 and 1923. All these investigators worked under the direction of Mr. A. W. Ashby. A list of the districts surveyed by each is appended.

The investigators must be congratulated upon the results of their work. Inquiries of this kind are not always too easily conducted, and call for a measure of enthusiasm and even of courage in those concerned if the best results are to be obtained. The note of pessimism which they have sounded in their *Ballade of Rural Industries* may be regarded more as the echo of a sentimental regret for the days that are gone, than the swan song of the workers in village industries.

It is impossible to name all those who assisted them in their work, but I should like to make grateful acknowledgement of the friendly reception accorded to them, and of the readiness with which those engaged in the various industries investigated gave of their time and knowledge. Without their cordial co-operation it would have been an impossible task.

For convenience of publication the reports have been collected together in four volumes, as follows :

Vol. I. Timber and Underwood Industries and some Village Workshops.

Vol. II. Osier Growing and Basketry, and Some Rural Factories.

Vol. III. Decorative Crafts and Rural Potteries.

Vol. IV. Rural Industries in Wales.

C. S. ORWIN.

AGRICULTURAL ECONOMICS
RESEARCH INSTITUTE,

¹ K. S. Woods, *Rural Industries Round Oxford* (Oxford University Press).

ORDER OF THE SURVEY

<i>Date.</i>	<i>District.</i>	<i>Investigator.</i>
1919-20	Oxfordshire	K. S. Woods and C. D. Biggs
1920-1	Bedfordshire	Helen FitzRandolph
1921	Derbyshire, Leicestershire, and Nottinghamshire	"
1921-2	Kent, Surrey, and Sussex	"
"	Westmorland, Cumberland, and Lancashire	"
1922	Shropshire, Staffordshire, and Cheshire	K. S. Woods
"	Hertfordshire and Worcestershire	"
"	South Western Counties	"
"	Durham	Helen FitzRandolph
"	Northumberland	"
"	North Riding of Yorkshire	Helen FitzRandolph and M. Doriel Hay
"	East and West Ridings of Yorkshire	M. Doriel Hay
"	Carnarvonshire	A. M. Jones
"	Denbighshire	"
"	Flintshire	"
"	Gloucestershire	Helen FitzRandolph
"	East Anglia and Essex	"
"	Lincolnshire	M. Doriel Hay
"	Warwickshire	"
"	East Midland Counties	"
"	Merionethshire and Montgomeryshire	A. M. Jones
"	Brecon and Radnorshire	"
"	Pembrokeshire, Cardiganshire, Carmarthenshire, and Anglesey	"
"	Monmouthshire and Glamorganshire	"

BALLADE OF RURAL INDUSTRIES

(After Rossetti's translation of Villon's 'Ballade of Dead Ladies')

Tell me now in what hidden place is

The swingle-hand and the scutching-cleaver,
And where the elegant silken braces

Drawn from the loom of the Coventry weaver ?

Where are the glossy hats of beaver,
High-blocked and stiff, the swain to please ?

The ancient spinster, who shall retrieve her
Where are the Rural Industries ?

Fashions the thrower in some lost pottery

'Long Tom' and 'Gully Mouth' for the believer
In home-brewed ale ? When Shakespeare to Shotttery

Strolled on Sunday the wife had liever

Use earthen punks, and it would grieve her
To-day that in wooden hives her bees

Lament straw skeps, in chills and fever ;
Oh, where are the Rural Industries ?

Where is the coracle, where the flasket,

Where, alas, the excise-man's deceiver,
The innocent-looking pannier-basket

Slung on an ass, the snug receiver

Of wine from France and lace from Geneva,
Brought by smugglers over the seas ?

Industrialism, cruel bereaver,
Where are the Rural Industries ?

ENVOY

Director of Survey, and each believer

In revival of village crafts like these,
'Spite changing Time, Hope's old deceiver,

Oh, *where* are the Rural Industries ?

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INTRODUCTION

RURAL INDUSTRIES IN RELATION TO LOCAL CONDITIONS

RURAL industries may be broadly defined, so far as this survey is concerned, as small industries carried on in country districts, dependent either upon some local supply of raw material or some local demand for the finished product, and being of the nature of craft-work rather than of machine-production, although even in small workshops some labour-saving machinery is being increasingly introduced for certain processes. It is clear that geographical, agricultural, and economic conditions all have an influence upon the existence of such industries.

During this survey the difficulty of assigning any reason for the distribution of the various industries was constantly arising. There are, of course, certain obvious factors which give rise to rural industries or account for their scarcity in certain districts. Where coppice is plentiful it is natural that underwood industries should flourish; it is not surprising to find that where collieries and their subsidiary industries blacken the countryside there should be no place for the village craftsman. But the reasons for the scarcity of small village industries in the agricultural parts of Northumberland, for example, or in the Fen Country are not so obvious.

Many of the raw materials of rural industries are used for other purposes. Available labour, moreover, will be absorbed in times of prosperity by the factories and mines, and the comparatively high wages to be earned here attract young people even from distant villages. The density of the population encourages big businesses to provide all the necessities of life on a large scale, and therefore there is little or no room for the small individual enterprise.

The effects of a large residential town on the surrounding country are somewhat similar to those of a manufacturing town, although perhaps not so extensive. In this case, many opportunities for employment in the households and gardens of the well-to-do residents are open to young people

from the villages. On the other hand, towns of this kind may provide a market for some of the products of rural industries, more particularly those of a decorative nature.

Certain country districts which attract tourists in considerable numbers, either on account of the beauty of the landscape or the interest of local antiquities, present this feature of a market for craft products in common with residential towns. This is seen in such places as the Lake District or in the beautiful old Cotswold village of Broadway. In the former, visitors are the chief customers for the wares of the numerous hand weavers; in Broadway, the silver-smiths of Chipping Campden and other local craftsmen are able to find a good market amongst the many visitors to the place. This market affects chiefly the newer handicraft industries, but also some which are of old foundation such as certain of the potteries.¹ The traditional village craftsmen benefit less often from this particular type of market, except in the case of the 'Broom Squires', whose besoms are needed to sweep the garden paths and drives of the big houses in the residential towns.

Another feature of the economic influence of any big town on the distribution of rural industries is the market which it provides for fruit and vegetables. The effect of this upon the surrounding country districts is that the growing of market-garden produce becomes the most profitable side-line for any villagers who might otherwise engage in another form of rural industry as a part-time occupation.

Seaport towns have certain industries of their own, some of them of the nature of rural industries, but they do not, as a rule, have any far-reaching influence on the neighbourhood. An exception to this is Bridport, where outwork on fishing nets is done in nearly all the surrounding villages. In Lowestoft, another centre of the net-making industry, and in other seaport towns, such as Scarborough and Yarmouth, where net-mending and a certain amount of net-making is done, the work does not extend beyond the limits of the town itself. Traces of an extensive industry for the spinning and twisting of net cord and the making up of trawl nets were found in the coastal villages of Yorkshire and Norfolk, but it is fifty years since this flourished as a village industry, and it is now entirely concentrated in the towns. There are many special types of basket used in seaport towns and villages, fish baskets of various patterns, coaling baskets, eel-grigs, and lobster pots, which are made

¹ See Vol. iii, *Decorative Crafts and Rural Potteries*.

in the district, sometimes by men who produce little else, but often as part of the output of the village basket-maker.

Such are some of the influences which extend into the country districts from urban areas; the more rural areas, remote from any such contacts, present other facts for consideration. Different districts have very special characteristics of their own, and some of the most individual may be treated separately.

The northern or agricultural part of the county of Northumberland is one of these. Here the hind, as the farm worker is called, is never a casual labourer but is engaged for the year. The level of agricultural wages through the county is comparatively high, and the allowances in kind, which usually include, in addition to the cottages, twelve rows of potatoes and the 'leading' of coals from the station, are good. The security of tenure given by the length of contract, so unusual in the life of the ordinary labourer, has resulted in a sense of responsibility and good workmanship which in turn has brought high wages in its train.

The effect of these conditions is that there is no one in these agricultural districts who is not fully employed in farm work, and consequently no one to undertake subsidiary industries. Doubtless these have been carried on in the past by small craftsmen in the market towns, where the usual wheelwrights, a rope-maker, a few coopers, and other workers are still to be found; but the great industrial areas of the North are not far distant, and their wares, replacing the output of the country craftsmen, soon find their way even to the smallest country town of this district.

The one craft which is characteristic of rural Northumberland, and which is also found in some parts of Yorkshire, is quilting, of a special type. Traditional patterns of intricate design are stitched all over the big quilts which are made by the only members of the farming community not engaged on the land, the wives and mothers of the hinds.

Again, the Fen Country, which includes the Holland division of Lincolnshire, the Isle of Ely, a wedge-shaped piece of the north of Cambridgeshire, two-thirds of Huntingdonshire, and part of the Soke of Peterborough, has very marked characteristics of its own, both as regards methods of cultivation and general conditions of life, which help to account for the marked dearth of rural industries in this district. Although yearly hiring of farm workers is not customary here, day labour being usual for both men and

women, yet the methods of intensive cultivation in force create so many different demands for seasonal labour that nearly every one is fully occupied. The population, moreover, is comparatively sparse, although it must have increased considerably since the time when the Fens were a marshy waste, and thus it follows that nearly all the able-bodied men and women are needed for work on the land. In the Holland division the amount of labour employed on the land is, in proportion to the acreage, in excess of that in any other county.

The effect of these conditions on rural industries is interesting. It might be expected that such isolated villages as are to be found in the Fens would tend to be more self-supporting than those which have better communications with the industrial world. Yet the village blacksmiths, wheelwrights, boot-makers, and so forth are not noticeably numerous or flourishing in the district. In fact, fewer of the old-fashioned wheelwrights, who are still the builders of wagons and carts for many of the neighbouring farmers, were to be found here than, for example, in Yorkshire; village blacksmiths are scattered and do not, as a rule, carry on a very flourishing business; not a single rope-walk was to be found in the whole district. The explanation is that the villages are comparatively new. When first the Fens were drained the rich lands were utilized mainly for pasture, as the drained marshes near Yarmouth still are, and the arable farming, bringing in its train the workers needed for these crops, began only a little more than a hundred years ago. The potato-growing, market-gardening, and fruit-growing are mainly developments of the last sixty years. There are very few old villages of the ordinary English type; in other districts where the village crafts such as smithing, wheelwrighting, or hurdle-making are to a great extent hereditary and have long traditions behind them, these die hard even under stress of competition with the urban coach-builders and engineering firms. The Fen villages are different; there are, it is true, old communities, such as that which has gathered around the ancient Abbey of Crowland, or the old port and castle of Wisbech, but these are not old agricultural centres. The villages have, to a great extent, grown up during the century in which the business of a village craftsman was beginning to decay, as the town workshops and factories gradually usurped many of his functions. As the agriculture of the Fens developed, the demands for labour, both of men and women, increased, and so there was little

need of any subsidiary occupations. Moreover, although the system of day labour, involving some uncertainty as to regular employment, is in force, yet there is a fairly steady demand for labour; good wages can be earned on the piece-rates which are paid, and many members of the family are generally in employment. In the Fens also, as in Northumberland, timber is scarce and of poor quality; so the largest group of all the rural industries, the timber and underwood crafts, have not flourished here. Local agriculture has, however, created one demand which the village craftsman was called into being to supply: baskets are needed in great quantities for packing the fruit; as well as for harvesting potatoes and carrots, and there is much land in the Fens which is well fitted for the growing of osiers. Thus, basket-making has become almost the only important rural industry of the district, and even this is declining. Baskets are now needed in such quantities that the fruit salesmen find it more convenient to buy their baskets from Dutch importers, who send them to this country in great numbers.¹

The only other important rural industry typical of the Fens is that of rush-plaiting, which sprang up on the banks of the Ouse and the Nene, where rushes of good quality for industrial purposes are cut. This industry, too, is on the decline. The reeds of the Fens are used for thatching, but there seem to be fewer reed-thatchers carrying on this craft here than on the Norfolk Broads.

With these exceptions the whole of the Fen Country is strikingly devoid of rural industries, and the reasons for this may be summed up under the two causes which have been described: the employment, to an exceptional extent, of both men and women on the land; and the lack of any tradition or survival of the old-fashioned village craftsman.

There are certain tracts of land, moorlands, marshes, and woodlands, which being very sparsely populated are not the homes of the ordinary village industries, but which provide special types of raw material and therefore have their own characteristic industries. They form, perhaps, the most interesting group, including amongst their workers types so different as those of the itinerant clogger, who pitches his camp in the woods and hews out clog-blocks with his axe, and of the skilled turner in the most up-to-date factory, adjusting his automatic lathe which turns out

¹ The present position of the whole basket industry in England is a precarious one. See vol. ii, *Osier Growing and Basketry Industries*.

chair-legs almost as quickly as the pieces of wood can be fed to it.

From the moorlands and heathy commons of Yorkshire, Derbyshire, or the New Forest is cut the heather for besoms, which are made by a particularly primitive type of craftsman; on the moorlands, also, the peat industries are to be found, similar in character in the Furness district of Lancashire, on the borders of Yorkshire and Lincolnshire, and on Sedgemoor.

Marshlands also have their own peculiar industries and their characteristic type of workers. It has been pointed out that reed thatching and rush industries, which belong to this kind of country, still survive to some extent in the drained and cultivated Fens. Rushes and sedge grow not actually on marshland but in running water; they need, however, a sludgy bottom and are found therefore in the rivers of a marshy country. In the Norfolk Broads there is running water in which rushes grow in abundance and, in the surrounding country, great stretches of marshland where patches of tall reeds lift their waving feathery heads. The marsh-men, the scattered inhabitants, have their own peculiar occupations. In little shanties on the fringes of the Broads work the old men—for few young ones have entered the trade—who plait rushes into 'frail' baskets and sedge into horse-collars.

Other marsh-men cut the reeds, and thatch with them, often going far afield to thatch farm buildings and houses with the Fen reeds. They find basketry a useful accessory industry for their spare time in bad weather, when they make up market and farm baskets of a very rough type, cutting their rods from bogs and thickets. For not only are rushes and reeds to be had for the cutting but even osiers are to be found in abundance in their wild state. The inadaptability of the marsh-man to modern methods, however, makes it probable that this interesting but archaic type will, together with his primitive and picturesque crafts, be extinct before many years have passed.

The agricultural areas which possess none of these special distinguishing features are the field in which flourish many of the more ordinary rural industries, particularly the village workshops of the wheelwrights, blacksmiths, and carpenters, which now exist mainly for repairing work, as well as the rope-walks, underwood and timber workers, and various small workshops. All these areas have their minor peculiarities; certain characteristics which exist in them

have already been noted in their relation to rural industries. A remote village is likely to be self-contained, and to have the craftsmen needed for local work. Easy communications by road and rail with larger towns bring the products of the factory within reach of the farmer and create competition with which the village craftsman finds it hard to contend. Irregular and seasonal employment in agriculture may cause a need for subsidiary occupation, but as a matter of fact this need is seldom met by rural industries, though the underwood crafts, where there is raw material for them, do sometimes play this part in the life of the farm worker.

There are several special features of farming in different districts which have an important effect upon local industries. Sheep farming is one of the most outstanding of these, and in the Yorkshire dales it was the origin of an interesting and widespread woollen industry. For several hundred years the dales were renowned for the woollen goods they turned out. In 1595 it was said that 166 dozen articles were produced weekly by a thousand knitters. In 1790 the cotton mills at Aysgarth were converted into worsted mills where the wool was spun, the women knitting the machine-spun yarn into sailors' jerseys. Other mills were started later which sold machine-made woollen articles and also bought up the hand-knitted stockings of the district; but factory competition eventually killed the hand-knitting industry of the dales, though there is still, at Middleham, a village of Wensleydale, a small stocking industry, several girls being employed in a workroom, making socks and stockings on knitting machines.

Elsewhere sheep farming has given rise in past times to local home spinning and weaving industries, of which, however, scant trace remains to-day, modern hand-weaving industries making little use of local wool. Some experiments have recently been made by the Co-operative Wholesale Society in founding spinning mills for the use of wool from local flocks.

At the present time, however, it is not so much the wool produced by the sheep as the methods of feeding the flocks which give rise to rural industries. Net-making flourishes, in connexion with rope and halter-making, in many villages and small towns in Yorkshire and Lincolnshire where the sheep are folded upon the turnips for many months of the year. In other counties hurdles are commonly used for folding sheep, and here the hurdle-maker is to be found wherever there is suitable coppice-wood.

Cattle breeding also gave rise in the past to its own subsidiary industries, tanning and the leather trades. The numerous tanneries which existed on the plain of York, nearly all of which are now derelict, probably owed their situation to the cattle farming of the dales, and the single small one which still survives in Settle is the only remaining trace of the once flourishing hide-market there. The great modern factory industry of boot-making in Northamptonshire owes its origin to the cattle industry which was carried on in the rich meadows of the Nene valley. The hides from this district and the oak-bark from Rockingham Forest and the Northamptonshire woodlands were shipped on the canals and the rivers Nene and Ouse to stock the booths of Stourbridge Fair.¹

Certain special crops call for factories to deal with their produce on the spot; during the War there was a revival of flax-growing and preparation in England, and several new mills were opened; the beet-sugar industry is also of recent origin in this country.²

From a consideration of the characteristics of these various localities it is clear that there are many different factors in the distribution of rural industries. Sometimes the reason for the existence or the scarcity of local industries must be sought in the history of the district. Even a supply of suitable raw material may be insufficient if other conditions do not tend to encourage small industries, if marketing facilities, for example, are absent, or if no immediate supply of labour is available. Of the industries which owe their existence mainly to local supplies of raw material, other conditions being favourable, the timber and underwood crafts form the largest group. The advantage of working timber as near as possible to the forests are so obvious that the tendency for timber industries to develop on a large scale and on factory lines, even in country districts, is not surprising. The underwood trades are usually established on a smaller scale, although few of them rely wholly upon local markets. They retain their character of village industries because there are many processes in the making of most of the underwood products, such as rakes, hoops, or oak-spelk baskets, of a kind not easily carried out by machinery. The main centres of the osier-basket industry are in the districts where osier-growing is carried on most

¹ *Victoria County History of Northamptonshire.*

² See Vol. ii, part ii, *Some Rural Factories.*

extensively and most efficiently. Baskets, however, are so universally used and so many districts provide a demand for special local types, such as the fish baskets of the East Coast, or the fruit pots of the Western Counties, that basketry is a craft to be found all over England. Other industries which exist where their raw materials are to be found have already been mentioned. In cases such as that of the rush, sedge, and reed industries, the supply may be said to have created the demand. In the marsh country of Norfolk the 'frail' baskets and the mats made of rushes have for centuries been in common use, rather than osier baskets and other types of matting, because rushes were more easily obtainable.

A great number of rural industries flourish most in the rather remote agricultural districts, in the village which is still to a certain extent a self-supporting community, and particularly in the one which is neither very rich nor very poor. It is here that the village wheelwright, blacksmith, rope-maker, basket-maker, and hurdle-maker are most often to be found. Not perhaps the most advanced workers in these crafts, but the most thoroughly representative, they supply the needs of the farmers, which constitute a demand sufficient to support two or three workers, or even a single one, but not enough to tempt a large commercial organization into the market. This is where the rural industry fills its own place in the village community.

The existence of a supply of labour which is not needed in agriculture or its subsidiary industries has in some cases led to the establishment of an industry often otherwise unconnected with local conditions. This unabsorbed labour may be the result of changing conditions in agriculture, or of the failure or migration of some other industry. It is most commonly utilized by the 'outwork' system, in which work is sent out from a factory to be done, usually by women and girls, in their homes. Particularly in some poor rural districts, where farm wages are low, is factory outwork to be found. Other industries of the factory rather than of the rural type, such as the small workshops of Devon, Cornwall, and Somerset, are sometimes established to utilize a labour supply of this kind. Their output is often sent away to be marketed in distant towns.

The recently started or revived 'handicraft' industries, which are particularly numerous in certain parts of the country such as the Lake District or the South-Eastern Counties, generally owe their origin to conditions quite

different from those which affect the existence of other rural industries. They do not rely to any great extent on local supplies of raw material, although rush-working industries have been revived in some of the rush-growing districts, and new potteries have also been opened where suitable clay is obtainable. The local markets which can be found for their wares in a residential town or a spot favoured by tourists have already been mentioned. Many of these decorative crafts are, however, but little dependent even on a local market. The attraction of a picturesque district often accounts to a great extent for the choice of these craft-workers of a site for their workshops, for many of them are people who can afford to choose where they will live, although they must find a means of augmenting their income or even of making their living. A small industry of this kind may be a valuable asset, both educational and economic, to a village, when local workers are employed, and therefore the 'arts and crafts' movement has its own importance in a general survey of rural industries.¹

The future of rural industries is difficult to estimate. It has been shown that many different factors have their bearing upon the problem. As different industries owe their origin to so many varied causes, so their future development is likely to be upon diverse lines. Certain problems, however, have emerged in the course of the survey which seem to belong to rural industries in general. In the discussion on the 'general conditions and prospects' of each separate industry these problems are treated in their bearing on the particular industry in question. They may be briefly summarized here.

One of the most outstanding is the lack of young workers in the traditional crafts, the future of which largely depends upon a supply of new recruits, and if crafts are of value to the community it is useful to consider how recruiting can be encouraged. The reasons why the younger generation avoid these industries are only too clear. Nearly every worker in a village craft will affirm, sometimes almost as if apologizing for his own unfeigned interest in it, that it is only by means of hard and continuous work that he can earn a livelihood. Others will admit that they only continue to follow their trade because they are too old to find an easier and more profitable one. An old cooper, on being asked whether there were many apprentices in his trade, asserted between violent blows of the hammer on the

¹ The movement is described in Vol. iii, *Decorative Crafts*.

metal hoops of the cask, 'No ; young folks nowadays like an *easy* job,' and added, with a glance at the investigator, armed with pencil and notebook, 'such as piling up statistics'. The young people are not only attracted by the prospect of earning a living by easier means ; they also see that even the hardest worker in a rural industry can only make small profits. In these industries are none of the chances for lucky speculation and quick accumulation of wealth which other trades sometimes appear to offer. Moreover, the last fifty years have seen a rapid decline of many of the village industries and the extinction of several, and it is a too common assumption that they have no chance of further development. During that time the older workers have been reluctant to apprentice their sons to their own trades. The old-fashioned system of apprenticeship is also out of date. The five or seven years of service as an apprentice which have been customary, are generally admitted to be unnecessary if really intelligent instruction is given. The whole problem of rural education in general is involved, particularly of the technical classes in villages, which have in so many cases been discontinued in recent years in the interests of economy. It is often said that these classes aroused little interest and therefore were not worth carrying on. On the other hand, there are many instances of village classes in wood-working and other crafts which are well attended by keen pupils. To take a single example, the metal-working industry of Newton, near Cambridge, and similar industries in the Lake District, have classes of this kind as their foundation. The success of these village classes seems to depend largely upon personality ; a teacher or organizer with a real interest in village life, and an understanding of the circumstances and needs of the pupils, can relate the instruction to actual conditions and practical possibilities, and thus make the craft seem to the pupils a real and interesting part of their lives.

One of the main distinctions of a rural, as distinct from a factory, industry is the importance of actual handicraft work in the former. The value of hand-work can hardly be estimated too highly, but it can also be abused. Certain processes, such as the sawing of timber, which are carried out slowly and laboriously by the hand-worker, can be performed more quickly by a machine with equally good results. In other cases the hand-worker can produce a result which it is impossible to repeat with exactitude by machinery. Where there is some intrinsic superiority in the

result of the hand-work, this should be worth paying for at the higher price necessitated by the greater labour involved. The future of many rural industries depends, probably, very largely on the extent to which they can make use of labour-saving machinery and at the same time retain the valuable characteristics of individual craftwork. The Rural Industries Intelligence Bureau has done valuable work in investigating the possibilities of the use of simple machinery in the village blacksmiths' and wheelwrights' shops and in distributing this information. Schemes for supplying electrical power to villages, such as the one which is being worked out in Herefordshire, may bring economical labour-saving methods within the reach of village craftsmen.

Another factor which will influence the future of rural industries considerably is that of markets for the finished products. It has been pointed out that the rather isolated, self-contained village is often the one in which the village craftsmen are to be found in the most flourishing condition. Obviously these conditions of isolation will not be permanent; as the country districts are gradually brought into more direct touch with the towns, even the most isolated rural craftsman will feel the effects of factory competition in some form. He must therefore seek a wider market for his wares. If he can continue to produce something which has the peculiar value of individual craft-work, he may be able to find this market. Thus, a Dorset blacksmith who turns out good wrought iron-work in the form of fire irons, door knockers, and other accessories for the house, finds that there is a ready demand for all that he can make.

Wherever possible, however, the rural craft-worker must avail himself of modern methods of organization or he will be outdistanced by more up-to-date rivals. He is often at a disadvantage in having both to buy his raw materials and to market his wares in small quantities. It is here that co-operation can help him. Co-operation, however, must begin at the bottom, the individual workers must themselves understand its principles and be convinced of its value. Co-operation is obviously difficult for scattered rural craftsmen, but it is just as obvious that it may be their salvation, and through it they should experience, incidentally, the friendly exchange of knowledge and discussion of common problems which is so valuable to isolated workers. By co-operative buying of raw materials, particularly when these are not locally produced, a group of in-

dividual workers can compete more easily in the market with the large firms than can a single buyer. Many of the handicraft workers, such as the weavers and the Women's Institute glove-makers, have already realized that co-operative marketing of finished products may sometimes enable the small-scale industries to supply a market in which the limited output of a single worker could not find footing. Some central organization, moreover, might often be able to get into touch with a market which the isolated rural craftsman does not know of. More than one small rural industry has been found which seems to be dying for lack of outlet, whilst elsewhere an unsatisfied demand for the very goods produced by it has been heard of. In the marketing of the output of any group of craft-workers there is a considerable difficulty however, for the individual character of the work often renders it unsuitable for wholesale distribution. In such cases other channels need to be explored.¹

It is impossible within the compass of this Introduction to examine thoroughly these many problems, on the solution of which the future of rural industries must depend. They can only be summarized, and some possible solutions suggested. In this tangled thicket every path leads ultimately to one point—that of education. Young workers will not enter the rural industries, and this is particularly true of the best workers, unless they can see some chance of future development. Yet this very chance rests mainly with the workers themselves. A spirit of enterprise, a far-sighted view of the future, a real interest in rural life and sympathy with the fine spirit of the craftsman are needed to lift the rural industries out of the rut of despondency and hopelessness into which many of them are falling. There is needed, too, the capacity of adaptation, the faculty of selecting the best help which modern science or art can give and combining it with the best qualities of craftsmanship. At present, there is little chance of reaching the village craftsmen through any organization, because they are almost entirely unorganized. But one practical enthusiast who can, through personal contact, convince isolated and humble workers that their work is of real value to the community, and help them by means of suggestions as to new labour-saving machinery, new lines of development, new markets to approach, will achieve more in the direction of

¹ This particular problem, which applies chiefly to the decorative handicrafts, is dealt with more fully in Vol. iii.

the rehabilitation of rural industries than a County Council Sub-Committee can do in years of inquiries and the formulating of schemes. Schemes must emanate from the workers themselves, and the man who is capable of the patient workmanship which goes to the fashioning even of such a seemingly simple thing as a wooden rake or a woven basket, is capable, if he be but awakened to the necessity and possibility of it, of visualizing the industry in which he works as one whole, and of planning for its future development.

PART I. WOOD INDUSTRIES

CHAPTER I

GEOGRAPHICAL DISTRIBUTION OF TIMBER AND UNDERWOOD INDUSTRIES

INDUSTRIES making use of English timber and underwood as their raw material are to be found in every county. There are three main factors which may play a part in determining the situation of these industries, but, since wood is a heavy and bulky material and a good deal of it must be waste, into whatever articles it is made, proximity to the source of supply is a point of prime importance, especially for the smaller scale industries. In some cases a local market for the products is required, especially when these are very bulky in comparison with their monetary value, so that it would not be commercially practicable to transport them a long distance. The trade of hurdle-making is an illustration of this, although it is true that some hurdles are sent long distances. Clog-making, also, is centred in the districts in which the clogs are most generally worn; but in this case the importance of locating the industry near to the raw material is seen in its frequent division into the two sections of clog-block cutting, which often takes place in the woods, and clog-sole making, generally carried out in the clog-using towns or villages. Wagon-building was formerly centred in villages and carried on by small workshops supplying the needs of a limited area, but recently it has been developed by big firms on factory lines, and shows a tendency to migrate to the towns. A third factor is the demand from some industrial district for a woodland product which localizes an industry in the nearest suitable rural area. Thus barrel-hoops are made in Sussex for London, and even for the north of England, because of cheap transport by sea to Newcastle. They are also made in Herefordshire, Worcestershire, and Warwickshire for the Birmingham district. Rods for making the crates in which pottery is packed are cut in the woods of Staffordshire, Herefordshire, and Worcestershire. Heather

besoms are made on the moors of the northern counties for use in the iron and steel works and shipbuilding yards of Newcastle, Sunderland, Sheffield, and other northern towns.

In all rural industries there are various natural and economic factors which may determine the suitability of a site; thus, the water-power provided by the headlong streams of the Yorkshire dales and Lake District helps to account for the existence here of the bobbin mills, whose output is used in the cotton and textile factories of Lancashire and Yorkshire. These cotton and woollen industries were themselves, at an earlier period, carried on in the remote moorland villages, deriving the power which worked their primitive machinery from these same mountain torrents. With the growth of industrialism the cotton and textile factories came to be concentrated in more accessible areas; lathes took the place of the spinning jennies and the fuller's vats and presses in the deserted spinning and fulling mills of the lonely moorland valleys; and the bobbins, needed in increasing numbers to feed the threads to the jaws of the monsters of machinery in the plains below, were cut from the beech and alder of the near-by woods.

In addition to these types of wood-using industries, there are many which supply a general market, and whose situation is determined chiefly by the existence of a supply of underwood or timber. Thus, rake-making may be carried on wherever suitable coppice-wood is available, because the demand for rakes exists in every agricultural district, yet is not sufficiently great to enable the industry to be supported solely by the local market. A rake, being small and light, and valuable rather for the amount of work which goes to its making than for the bulk of wood, can conveniently be sent to a remote market. Owing partly to the seasonal nature of the demand, the making of rakes is generally combined with that of other articles made of the same materials, such as scythe-shafts and tool-handles and hurdles.

The wood-using industries are perhaps the most interesting of any group, including as they do several examples of the type which is almost an anachronism in the industrial life of to-day. The trug-making of Hurstmonceaux in Sussex, and the Kingscliffe turnery in Northants, have all the characteristics of a traditional rural industry, less noticeable in some others which have become more standardized. These two examples show, moreover, that localization does not necessarily imply stagnation. The

group of Kingscliffe turners has existed for at least two hundred years in the quiet village tucked away in a fold of the uplands of Rockingham Forest ; a certain amount of rivalry has served to sharpen their wits, whilst friendly intercourse has encouraged the working out and gradual perfection of tools and methods, the workers learning from their fathers the secrets of the craft and, in turn, handing them on to their sons. Thus a high degree of skill has been developed amongst these craftsmen : by the turners in shaping the wood on the lathe and in executing their own designs on the old-fashioned butter-prints, and by the blacksmith in fashioning the tools for their use.

The trug-makers of Hurstmonceaux have practised their craft from time immemorial, supplying this peculiar type of wooden basket, in which lightness and strength are combined, for local use in garden, farm-yard, and house. About one hundred years ago a certain Thomas Smith realized the merits of the trug and made it more widely known. But although the market for trugs was extended, the making of them has always been confined to the Hurstmonceaux district of Sussex, owing to the value in the industry of the traditional skill in splitting and shaving the strips of willow of which the trug is made. However, machinery has recently been introduced by one firm of trug-makers, and, although their products are of an inferior quality, because strips of wood cut by machinery can never have the strength of those which are split by hand along the grain, this factory production threatens to kill the hand industry. If this comes to pass, trug-factories may be established equally well in any district, and another product of rural craftsmanship, with a beauty and interest of its own as individual as the Sussex Downs beneath whose shelter it is made, will be replaced by a factory product which has lost its character beneath the mechanizing touch of industrialism.

Even in rural industries which are more widely distributed, many local peculiarities of apparatus and nomenclature are to be found. East Anglia, the Midlands, and Gloucestershire all have their peculiar devices for splitting the poles used in hurdle-making. The split poles are said in the Midlands to have been rived, in other places they are cleft, rent, or, again, riven ; in Norfolk they are reft or even ' fiv ', and the hurdle made from them is known as the ' rift hurdle '.

There is mention of the Kingscliffe turnery so far back as

the middle of the eighteenth century : 'The latter is a distinct trade of itself, and tools they have appropriate to it. There is scarce any town in England wherein this sort of handicraft is so much professed or is so managed with so great dexterity as here.'¹ The baskets made of plaited strips of oak are called spelk or spale-baskets or swills in the North, whiskets in Shropshire, oak skips in the Midlands (skip or skep being a generic term for a large basket) ; or, alternatively, in several districts, scuttles (scuttle being another general name for any shallow basket). Thatch-pegs are spits in Hunts, brotches or broaches in East Anglia, and spars or spicks in the south-western counties.

In several woodland industries there are points of special antiquarian interest. The charcoal burners live, whilst working in the woods, in huts which are said to be of the same type as those inhabited by the prehistoric hut-circle dwellers of these islands. These huts resemble an Indian wigwam, but are built of sods and poles ; where the poles meet together at the top there is an opening for the escape of the fumes from the charcoal fire. There is barely room around the few stones which form the fireplace in the centre of the hut for the straw palliasses of the three men who share this primitive shelter, which is closed by a canvas door, weighted down with a pole, and kept rigorously shut during the night, so that the men may, as they explained, 'take no harm in the woods'.

Every type of industry may be found amongst those using wood, from that illustrated by the forest charcoal-burners living in their primitive huts and working without the aid of any modern appliances, to factories on the most up-to-date lines, with specialized work and the latest mechanical inventions. They may be classified into four main groups : work in the woods, village workshops, saw-mills, and factories ; but these classes are not sharply defined, one industry sometimes having the characteristics of more than one type.

Most of the underwood industries, such as hurdle, rake, and hoop-making, are carried on in village workshops, as is also wheelwrighting, turnery, and cooperage on a small scale for the supply of local needs. In these small shops all the work may be done by hand, but sometimes an engine is used to drive saws and lathes.

Saw-mills and timber-yards are of any size, from the type in a village which buys a few trees from local estates and saws them up to supply the neighbouring farmers, wheel-

¹ See *The Victoria County History of Northamptonshire*.

wrights, and other craftsmen with what they need, to the big mill which may be established for weeks, months, or years in the midst of a tract of standing timber which has been bought by a firm of merchants. Wheelwrighting, carpentry, turnery, riving, and other work is often carried on by the saw-mill in addition to the cutting up of wood. There are also the 'sawing, planing, and moulding mills', a purely urban type, which work chiefly for builders.

Wood-working factories obtain their raw material from saw-mills, ready cut into suitable planks or blocks. Few of them can be included under the heading of rural industries, but, considered in certain aspects, they often have some bearing upon the latter, so they cannot be entirely ignored in this survey. Turnery of all kinds tends to develop into a factory industry, although it is still found in every form, including that of the open-air workshop in the woods. Clogging also exists in this primitive type of organization, as well as in the town and village workshop and in the factory, and the clog-factory sometimes follows the track of the itinerant gangs of hand-cloggers, one having been established for a period of eleven years on the Raby Castle estate on the fringe of the Durham fells.

Timber-using industries, as distinguished from those using underwood, tend more to factory development, because the use of machinery is of greater value in saving the labour of sawing, which is more required in dealing with large trees than with poles and rods. Also in the case of timber industries, the greater capital required for the purchase of raw material and the difficulty of felling and carting it, all help to make them unsuitable for the business of a small village workshop. There are numerous underwood industries showing all the characteristics of the rural type, namely the use of local material, the carrying out of the whole process of manufacture in one workshop by a man skilled in all processes, or by a few men, each skilled in every part of the work, and the supply of goods to a local market with the special requirements of that market considered. But timber industries of this kind are comparatively rare.

Although industries using wood are to be found in every county of England, there are certain districts pre-eminently notable for the supplies of underwood and timber available and for the development of industries depending upon these supplies.

The South-Eastern Counties

Sussex is the most thickly wooded of all the counties of England, containing 110,000 acres of woodland, which is one-ninth of its whole area, and the largest extent of woodland to be found in any county except Yorkshire. Sussex oak has been noted for its excellence through five centuries, and was exported as early as the fifteenth century. Kent is also well wooded, and there is a considerable amount of timber and underwood in the Hindhead, Guildford, and Dorking districts of Surrey. In addition to the oak, beech timber is fairly plentiful, the beech woods of the downs between Chichester and Midhurst being especially notable.

The underwood industries are distributed along the eastern part of the ridge of the North Downs, from Maidstone to Canterbury, especially around the latter, where are the Forest of Blean and other large woods; in Ashdown Forest and the surrounding wooded and heathy tracts, westward to Horsham and eastward to Cranbrook; in the neighbourhood of Guildford and eastward as far as Dorking and in the Hindhead district.

Of these industries, the most important, in that it is peculiar to Sussex, is trug-making, carried on at Hurstmonceaux and in neighbouring villages, and also by a few makers who have migrated to other parts of the county, and by a few estate workmen, who make trugs only for their employers' own use.

The walking-stick industry is situated in and around Chiddingfold, a district thick with coppice-wood, and at Guildford and Dorking. It is about sixty years old, but for some time before its foundation the material for walking-sticks had been grown in this district and sent to London to be prepared there.

The making of split chestnut-fencing is a comparatively new industry, which flourishes in the Tonbridge district, at Haslemere, and in North Kent. Hoops are made in and around Tonbridge, in Ashdown Forest, at Uckfield near Ashford, and at Maidstone and Faversham in Kent, Haslemere in Surrey, and Uckfield and Billingshurst in Sussex. In addition to the independent hoop-makers, there are some employed in the Gravesend cement works. There are about a dozen hurdle-makers in Kent and some in East Sussex; fencing is also made by them. 'Broom Squires', or makers of birch and heather besoms, are to be found on

the open heathy wastes near Hindhead and in Ashdown Forest. Rake-making is carried on by two firms near Ashford, by one at East Hoathly, and another near Dorking.

The gipsies who abound in the south-eastern counties make, out of underwood, small articles for which no great skill is required, such as clothes-pegs and besoms; these they hawk about the country.

Of timber industries, shipbuilding was at one time the most important in Sussex, large vessels having been built; it still survives, the chief output now being yachts and sailing-boats, but it is in no sense a rural industry. There are the usual saw-mills, and Maidstone and Hawkhurst are centres of brush-back turnery and other factory woodwork.

In the midst of the noble beech woods which clothe the southern slopes of the downs above Chichester, chair-leg turnery with the use of the primitive pole-lathe is carried on by a craftsman who, about ten years ago, came from the Chilterns with a small group of turners and set up his working camp here.¹ He lives in the village of Chilgrove, and works now with only a single helper.

The downs here form a boundary between the timber and underwood districts; on the south the beech woods stretch up to the ridge, but the northern slopes are bare, and away beyond the valley of the Rother lie the woods from which coppice is cut. The cleavage may be noticed not only between the woodland industries but even between the everyday country life on either side. This kind of insularity, though it preserves the local character which is such an interesting feature of rural industries, is an obstacle to their further development.

The Goodwood beeches, not far from Westdean Wood, provide material for the making of malt shovels, bakers' peels, seed-lips, and other articles.

On an estate near Midhurst, wood is burnt for charcoal, which is supplied to London merchants. In some other parts of Sussex, and in Kent, charcoal-burning is part of a labourer's regular work wherever hops are grown, the charcoal being mixed with anthracite coal for use in the kiln which dries the hops. A little of the Midhurst charcoal is used in the Faversham powder-mill, but most of that required is made in the mill itself. Some English alder and willow is used, and dogwood is imported from France and

¹ For chair-leg turnery in the Chilterns area, see K. S. Woods, *Rural Industries round Oxford* (Clarendon Press).

Germany. This mill was established in the time of Queen Elizabeth to supply powder for continental wars, and it still manufactures for military purposes, unlike the powder-mills of the Lake District and of Cornwall, which cater chiefly for the mining industry. An isolated situation, and the presence of water and of wood for charcoal, are the factors determining the site of a powder-mill of this type.

In 1760 a certain Mr. Duke, of Penshurst, invented a cricket ball, and the making of these balls, which is now carried on in the Tonbridge district, dates from this time. In the course of time bat-making followed, and willows are grown for the purpose by a number of farmers, notably in the neighbourhood of Robertsbridge, in which is one of the makers of bats. The black Italian poplar is also in demand for cricket bats.

The Lake District

Westmorland, Cumberland, and the Furness area of Lancashire—which forms, both geographically and agriculturally, a part of the two former counties rather than of the rest of Lancashire—are the scene of a flourishing group of timber and underwood industries of individual character. About one-third of the whole area of Westmorland, Cumberland, and Furness is mountain and heath land, totalling nearly 300,000 acres. There is a certain amount of coppice-wood on the lower slopes, in the valleys, and on the shores of the lakes, and the Furness fells are particularly well wooded. Here the growing of coppice for cutting every twenty years has been customary for generations.

The making of oak-spelk baskets, or swills, centres in Furness. The swill may be compared with the Sussex trug, in that it is a basket made of strips of wood shaved thin and smooth; the swill is of oak spelks, which are woven together, whilst the willow strips, of which the trug is made, only run along the length of the basket, being held together by nails and by the rim. In the North swills are used for the household, farm, and garden, replacing wicker baskets for all the purposes of everyday life. They are not peculiar to the Lake District, but are used there more generally than elsewhere. They are an ancient form of basket arising from the circumstance that oak is here a material more ready to hand than willow rods, the growing of the latter and making of wicker baskets being an industry which is non-existent in the Lakes. Swills are made not only for local use but for export to Scotland,

where, again, there is little facility for willow-growing, and to Liverpool for use in coaling ships, but no general market for them has been found in southern England. The stripping of oak-bark for use in tanneries is carried out in conjunction with the swill industry.

Charcoal is a notable product of the Lake District, being supplied to the famous steel-smelting furnace of Backbarrow. It is prepared by small groups of burners, of whom there have been as many as eight working at one time, although at present there are seldom more than two or three. When coppice is cut, any wood that is unsuited for use in making swills, hoops, crate rods, or other articles, is set aside to be burnt for charcoal.

There are, perhaps, a dozen hoop-makers working at present, but the industry seems to be on the wane. They are found at Backbarrow, on the river Leven, which runs out of the southern end of Lake Windermere, and at Hawkshead. The making of birch and heather besoms is combined with swill and hoop-making.

Small hard-wood rods are made into ship-fenders, for use in Liverpool, at a water-mill near Coniston, and they are also sent to the Potteries for crate rods. Rake-making also occurs in several places in this district.

Of timber-using industries, the most important is clog-making, which is carried on along the fringes of the Lake District. Along the Eden valley, from Penrith to Kirkby Stephen, cloggers are employed in many town and village shops, some cutting blocks and soles, and others buying these and adding the uppers. Beech, birch, and alder, from which the soles are made, abound in the Kirkbarrow woods, on the Lowther estate, and elsewhere. At Wigton there are big firms which send gangs of men to the woods to fell timber and cut clog-blocks, these being sold either to the Eden valley sole-makers or finished in the Wigton workshops. Farther south, beyond the Lake District but in an area which has similar geographical features, in the eastern parts of Lancashire, on the fringes of the West Riding moorland, there are clog-block cutters at work in the alder woods near Garstang and Kirkby Lonsdale; these supply the clog-sole makers of Lancashire towns, and also finish some of the blocks themselves during the winter months when they cannot work in the woods. In the same district, but farther south, a chair-making industry has long flourished in the village of Chipping.

On many of the larger streams of the Lake District, such

as the rivers Kent and Esk, there are water-mills for the manufacture of bobbins, tool-handles, and brushes, sometimes combined with clog-sole cutting by machinery. Three of these mills are found in Staveley, and others in Kendal, Ulverston, Keswick, Egremont, and other towns.

The boat-building industry on Lake Windermere was established to build boats for use on the lake, and local timber sufficed for the needs of the early builders. It has now, however, developed into a large industry, supplying trading and naval boats as well as racing yachts and pleasure craft for use on the lake, and large quantities of foreign timber as well as English wood are used. This industry fits very neatly into the economic life of the neighbourhood, for the men who earn their living in summer as boatmen on the lake, or by catering for visitors in other ways, are glad to find winter work in the boat-building yards. There is also a large boat-building industry at Arnside.

Herefordshire

This county is noted for its extent of fine timber, especially oak, although ash and larch also grow well, and in certain districts coppice products, ash, hazel, chestnut, and birch, are also abundant. The woodlands of this county fall into five main groups: (1) to the north of Hereford, round Wormsley and Dinmore, where hardly any coppice-wood appears to be cut; (2) due south of Hereford, the Much Birch, Little Birch, and Dewchurch district, where crate rods are cut for Staffordshire; (3) to the south-east of Hereford, where hop-poles have long been the staple product; (4) the Ledbury and Malvern district, which is similar in character to the district south-east of Hereford; (5) in the neighbourhood of Ross, on the verge of the Forest of Dean, where timber is abundant.

From the point of view of rural industries the most important of these districts are those of Woolhope and Ledbury, where coppice-wood predominates. In other districts very little of the timber is worked up locally; a great deal of oak is felled and sawn, but it is sent out of the county. The timber trade is chiefly in the hands of firms with external interests, and there has been no great growth of population or of industry in the county to encourage local enterprise. Most of the underwood grown in the county is utilized by local industries. A few hop-poles are cut for the Ledbury district, where they are still used to

some extent, especially in hop-fields lying near the woods, but posts and wire have largely superseded the poles. Pit-props are sent to the Forest of Dean and other colliery districts. Hoops are made for the industrial districts of the Midlands. Crate rods and crate heads are cut for the Potteries, and a little hurdle-making is carried on. Tool-handles are made, as a supplementary industry, by a wheelwright and a few other wood-working firms. Chair legs are turned in a Ross wood-yard. The 'heatherings', or small branches of the coppice, which cannot be used for manufacture are made up into faggots, and in the neighbourhood of towns this is the chief branch of the underwood trade.

The South-Western Counties

These counties are well wooded, and are mainly rural in character, containing no industrial area of prime importance. There would therefore seem to be abundant scope for rural industries making use of wood, but, as a matter of fact, these do not flourish here to any great extent. Devonshire contains about 86,000 acres of woodland, which is comparatively a large amount, even for the county ranking third in size. There are also nearly 177,000 acres of mountain and heath, which would provide material for heather besoms, but these are not made here. In Cornwall there are only about 32,000 acres of woodland, much of which is of poor quality: Somerset has over 48,000 acres, and, in addition, nearly 59,000 acres of mountain and heath; in Dorset and Wiltshire there are extensive high woods, containing valuable timber, and also an abundance of coppice, especially in the latter county; and the New Forest is a notable feature of Hampshire. In these counties no great care is taken in the cultivation of underwood, but since timber grows well, coppice-wood of good quality could be produced. Here, as elsewhere, there were great clearances of timber during the War for Government use, but this has had little effect on local industries, for they never used it to any great extent.

The commoners of the New Forest breed ponies and cattle, and market gardening is carried on at the Bournemouth edge of the forest; there are large numbers of visitors and residents, and a considerable amount of local labour is employed in catering for their needs; all these factors help to obviate the need for supplementary industries among the working-class population, and to account for the fact

that so little use is made of the available supplies of under-wood and timber. A large turnery at Brockenhurst uses local material, but, except for this, the only woodland industry in the New Forest is the making up of 'bavins', the large faggots which are used for firing the brick-kilns, and the supply of wood and furze to the pottery kilns at Verwood. Faggots are also made up for use by bakers, but the introduction of coal grates in the cottages has caused a decline in the value of firewood.

Beyond the New Forest, in the area of heathy commons and sparser woodland to the west, the making of crate rods, barrel-hoops, and besoms flourishes, and these industries also occur at Tadley and Baughurst, in the wooded area north of Basingstoke. In both cases they are in the hands of commoners, who seem to be of a different type from the usual agricultural population. They are independent, hard-working, and careful with money, often saving enough from the profits of a none too plentiful livelihood to buy themselves a house and land. But they live in isolated places, and are reserved by nature.

A supply of raw material which must be used locally, if at all, because it is of a quality too poor to be worth transport to another district, is the scrub-oak of Devon and Cornwall. During the War pit-props from Devon were sent to the Welsh coal-fields, but owing to the crookedness of the wood and the danger of it splitting, the miners did not consider it to be as safe as foreign wood, which grows 'straight as a reed': the demand for pit-props from Devonshire therefore ceased as soon as foreign poles were obtainable.* The scrub-oak is used locally in clay works and tin mines, but again, the tendency to split makes it useless for clay wagons. There are traces of oak-splark basket-making in Devon, but no existing industry of this kind was met. Oak-bark stripping used to be carried on extensively, and some bark is still stripped in the coppice-woods near Bodmin.

Some of the scrub-oak is burnt for charcoal, and during the War a retort was opened at Bideford, where oil and acetic acid were extracted from oak, charcoal being a by-product. Hundreds of tons of wood were used in this retort, but it is now closed. The best of the scrub timber is used for cart hubs and spokes and for 'tree nails' by big timber merchants; some is made into fencing, and the planks are used for coffin-boards when elm is scarce. Boats are also built of it, since it is not, when saturated with water, so liable to split as when dry. In Devonshire 'rustic' furniture is

made of the twisted branches of the coppice-wood. Wattle hurdles are made in Dorset, north of Blandford, and are exported to places as far distant as Yorkshire.

East Anglia

The acreage of woodland is not great in either Norfolk or Suffolk, but they contain a group of underwood industries with some characteristics of its own. There are about 58,000 acres of woodland in Norfolk and 39,000 in Suffolk, but the woods are scattered and for the most part small. A feature of the district is the number of heathy tracts which lie between Brandon and Norwich, the country immortalized by George Borrow in *Lane-gro* and *Romany Rye*, and still haunted by gipsies. In the neighbourhood of Wymondham great numbers of birch trees grow on these sandy commons.

Hurdles are made in many Suffolk villages, particularly within a radius of twenty miles of Bury St. Edmunds, which is a well-wooded district. Hurdle-makers are found here in villages within a few miles of one another, as at Welnetham, Bradfield St. George, and Bradfield St. Clare. The close folding of sheep on the arable land creates a demand for hurdles in considerable quantities. Hurdle-making extends in one or two places beyond the Norfolk and Essex borders, and includes a few wattle-hurdles in the Norfolk woods. Broaches and thatch-pegs are made by the hurdle-makers, and wood which cannot be used for these purposes is made up into clothes-props, pea-sticks, and faggots.

Birch broom-making is often found in conjunction with hurdle-making, and there are also some half-dozen makers on Horsford Heath near Hevingham. On Weeley Heath, near Clacton-on-Sea in Essex, there used to be many makers of birch brooms, but now only one remains. Rakes are made at several places in Suffolk. The making of hoops for Yarmouth fish-barrels, which was carried on prior to the War, seems to be extinct. Walking-sticks are made by one smallholder in Halstead, and there is a worker, who goes by the nickname of Tubby, who makes kegs for the Brandon flints.

All these are carried on as part-time industries by smallholders and others. Industries on a larger scale which provide a livelihood for the craftsman, and sometimes for journeymen as well, include turnery and other woodwork for farmers, brush-back turnery at Diss and at Wymond-

ham, where the abundant birch trees provide material, and clog-making in Norwich. The turning of bowls (the balls used in the game of that name) at Framlingham was started in 1870 as a side-line to the manufacture of sporting guns, which are no longer made here. There is also boat-building on the Broads at Wroxham.

Shropshire and Warwickshire

The county of Shropshire is most thickly wooded in the south and along the borders of the Severn. There are considerable forests, including the Wyre or Bewdley Forest in the south-east, Clun Forest of 12,000 acres in the south-west, and the Bagley Moors between Shrewsbury and Drayton. There is a small group of underwood industries, but little local use is made of the supply of timber. Transport service in this county is poor, and this may help to account for the general scarcity of rural industries using local raw materials. But there is an abundance of oak coppice, from which baskets are made. Bewdley is the centre of the 'whisket' industry, this being the name by which oak-spelk baskets are called in this district. Besoms are made side by side with this industry, a little charcoal is burnt, and oak-bark is still stripped for the Bewdley tannery.

In the woods of the Bridgnorth district and in the Wyre Forest hoops are made for the tubs used in the tile and pottery works of Coalport. The industry was in a declining condition when investigated, but there seems to be some possibility of a revival. Crate rods for the Potteries are cut in the same district, and also in the neighbourhood of Market Drayton beyond the Staffordshire border. Crates were once made up here, but the makers migrated to the industrial towns, because better material, from Hampshire and Sussex, is obtainable there, and its quality enables them to earn higher wages on crate-making.

There is some clog-making carried on, but the firms which have their head-quarters here often send gangs of clog-block cutters to work in the woods of other counties.

Warwickshire is fairly well wooded, although there are no extensive forests. There is a small group of underwood industries, chiefly located in the south, the influence of the industrial areas of Birmingham and Coventry militating against any such survival in the northern part of the county. At Berkswell and Hockley Heath, which are in this part of

the county, but situated as far as possible from Coventry on the east and Birmingham on the west, rake and hurdle-making are carried on.

Hoops are made for use on the barrels in which the hardware manufactured in the Birmingham area is packed for export. Hoop-making used to extend over the borders of the county into Gloucestershire and Worcestershire, but it has dwindled. Hurdles are part of the output both of makers-up of underwood and of builders and timber dealers; but sheep-rearing is not an outstanding feature of Warwickshire farming, and the demand for hurdles is not very great, except on the southern borders of the county near the Cotswolds. Rake-making is carried on together with the supplementary industries of making scythe-shafts, fork-stales, broom-handles, split fence and gate-rails, and stakes for pig-wire.

Dealers in underwood make up pea- and bean-sticks for sale, cutting up the larger material for firewood, and making hurdles of the better poles.

North-Eastern Counties

Northumberland does not contain any great area of woodland, but there are nearly 480,000 acres of mountain and heath. Rural industries of any sort are, however, scarce, owing to the peculiar conditions of agricultural employment in the north and the collieries in the south. In Durham the influence of the colliery districts on such agricultural areas as remains is even more disastrous, and, although the county was once renowned for wood and water, there are few trees remaining. A typical development of a rural industry in a district on the fringe of the industrial influence is a temporary clog-factory installed for eleven years in the midst of a tract of beech wood three miles long, from which the timber has been bought in bulk by the clog manufacturers. The demand for pit-props leads the landlords to grow coniferous rather than other kinds of wood, and these being often at the very mouth of the pit can be profitably disposed of.

This whole area, stretching from the Scottish border south to the high road which runs through Helmsley, Kirkby Moorside, Pickering, and Scarborough, along the southern margin of the Cleveland Moors, consists mainly of moorland and colliery districts. A few rural industries using wood are found in it.

• Clogs are worn by miners and also by dale farmers and their wives in winter. There are, in the towns, many so-called cloggers, whose work now is only that of fastening the uppers on the machine-made soles. There are also workshops in the suburbs of Newcastle and Teesdale, Swaledale, and at Barnard Castle, where clog soles are made by hand.

Besoms are used in the ironworks and 'shipyards of Newcastle and Middlesbrough, and are made on the Pickering Moors in Yorkshire and on the Wolsingham Moors in Durham.

The 'poss-tub', also known as the 'dolly' or 'peggy tub', seems to be a form of wash-tub especially popular among miners' wives, and thus are found a number of coopers who are chiefly concerned with their production.

In the Mulgrave woods, near Whitby, oak-spelk baskets used to be made, but this industry has died out.

In Yorkshire, although the acreage of woodland is large, it only represents a small proportion of the area of this, the largest county in England, the 58,000 acres in the North Riding being only $4\frac{1}{2}$ per cent. of the whole area. Most of this consists of larch and Scotch fir, materials which are little used in any rural industries, and occurs mainly in the Helmsley district, which has been included with Northumberland and Durham. In the East and West Ridings there is even less, and most of it is found in the form of small woods which are scattered over the central Plain of York, although some lies along the valleys of the mountainous moorland district of the West Riding. This mountainous area, barren except for heather and scanty pasture, is very large. Although it might provide material for besoms, it supports such a small population that the absence of any rural industries is not surprising, whilst the more fertile and populous valleys, such as Airedale and Calder Vale, suffer from the symptoms of industrialism. The most recent traces of besom-making are found in the village of Awkley, west of Doncaster, and here more birch than heather was used for the broom heads, and was obtained from the Hatfield Moors on the Lincolnshire border. Within living memory there were sixteen besom-makers in this village, and some were at work up to 1913. Now, however, there is not one, the neighbouring collieries, with their ever-increasing demands for labour, having starved out the industry.

In Calder Vale, which hums with factories, clogs are made, but chiefly by machinery, the great Hebden Bridge factory standing at the head of this valley. There are other factories at Snaith and Halifax. Hand-cloggers were once numerous in the towns and villages of the dales, but none are now to be found, and the rural population of this part of the country seems to have given up the wearing of clogs.

At Bedale and Askrigg in Wensleydale, and Addington in Airedale, rake-making crops up unexpectedly, but in the two latter cases it is only carried on as a side-line in a general turnery mill. One of these mills also makes hoops for the peggy-tubs of the local coopers.

The only other wood industries of note in Yorkshire are the turneries of the West Riding, where, as in the Lake District, water-power was often a factor which helped to determine the places in which this industry was established. Small bobbin turneries making local timber into bobbins for the textile factories of Yorkshire and the cotton-mills of Lancashire were once a feature of this district, but a very large factory at Steeton has cut out most of the smaller firms, and similarly, other small turneries which still use water-power and hand-lathes have a hard struggle for existence in competition with those which have installed up-to-date machinery. These mills make peggy-sticks, chairs, stools, wagon parts, and other things for both local and general markets.

Midland, East Midland and Home Counties

In these counties, including Nottingham, Derby, Leicester, Rutland, Northampton, Lincoln, Huntingdon, Cambridge, Bedford, and Hertford, there is a miscellaneous collection of timber and underwood industries, distributed rather sparsely.

All that remains of the ancient Sherwood Forest, which used to cover all the western part of Nottinghamshire, is to be found in the district known as the Dukeries, which covers an area twenty-one miles long by five to ten miles wide, surrounded by collieries. The area was largely disafforested at the close of the eighteenth century, and the Nottinghamshire coal-fields have encroached upon it in recent years, but tracts of timber are preserved in the great parks of Welbeck, Clumber, Worksop, and Thoresby. In Derbyshire, also, there are considerable woodlands on the estates of the Dukes of Devonshire and of Rutland, but there is little coppice. The woodlands of Leicestershire are not extensive ;

Charnwood Forest, between Leicester and Loughborough, about ten miles long and six miles broad, is now wooded only in spots. Of the tiny county of Rutland, a large part was formerly occupied by forests, and many woods remain. Northamptonshire contains many large woods, especially in the Rockingham Forest area and in Whittlewood and Salcey Forests in the south-east. The county produces ash timber of the finest quality, and Yardley Chase is famous for its ancient oaks.

The counties of Nottingham, Derby, Leicester, and Northampton are occupied largely by industrial areas which spread their tentacles into the rural districts. A quantity of the timber is dealt with by big merchants, and little local labour is employed on making it up, but there is more in Northamptonshire, where coppice is fairly plentiful, than elsewhere. Where timber is most abundant, as in the Dukeries and parts of Northamptonshire, especially in the Silverstone district on the Buckinghamshire border, there are wood-yards, mainly in the vicinity of the market towns, which buy local timber. The smaller firms render a useful service to the foresters by taking a few trees at a time, particularly those which have been blown down or have to be felled in small quantities. This wood is made up into farmers' goods, such as troughs, hurdles made of wood more often sawn than split, and fencing which is occasionally of cleft, but more usually of sawn oak. Turnery of domestic articles, such as peggy-sticks (or 'dolly-pins') and mangle rollers, is often carried on as a side-line. Brush-stocks for a local brush-works, bobbins for silk, hosiery, or lace factory, or tool-handles for implement works are also turned in these mills. Implement handles were at one time extensively made of underwood in Northamptonshire; but a big implement factory, such as that at Bothwell, now often has its own turnery department with automatic lathes.

Clogs are still worn in this area by industrial workers who have to stand on wet floors, as is the case in bleaching and dyeing works, tanneries and coal-mines, and by farm workers in wet weather for field work. They were formerly made in the Dukeries.

Besom-making is the most rural industry of this area. In Sherwood Forest it is carried on as a supplementary industry, birch twigs being used for the heads, and heather brooms are made on the moors of North Derbyshire and in Notts. at Mansfield and near Ollerton. Both moors supplying the heather, and woods whence the stakes and birch

twigs can be cut, are found on most of the large estates, and the Sheffield steel works provide a market. The only other locality where birch broom-making was heard of was at Bushey Heath, near London, where a wood-dealer employed a besomer, but it has been given up owing to the scarcity of birch, and the market is now supplied from Tadley, in Hampshire. In the Dukeries oak-spelk baskets are also made, together with the besoms.

In Lincolnshire the industrial influence is less felt, except in the immediate neighbourhood of the larger towns. The whole of the Holland division of Lincolnshire and part of the Kesteven division, the Soke of Peterborough (Northants), Cambridgeshire, the Isle of Ely, and parts of Huntingdon and Bedfordshire fall within the Fen Country, which is described below.¹

The Lindsey division of Lincolnshire contains about 40,000 acres of woodland. There are extensive patches on the Lincoln Cliff and the Wolds, and east from Lincoln to the verge of the marsh and fen land there stretches a well wooded country, chiefly within the parishes of Wragby, Tumber Woodside, and Revesby. In the Kesteven division woods are found between Newark and Lincoln and on the Nocton and Blankney estates (on the eastern slopes of Lincoln Heath), and farther south between Grantham and Stamford. In the Isle of Axholme, in the north-west of Lindsey, there are coniferous woods and heathy tracts, but little use is made of the raw materials obtainable here, except by the peat-cutters. There are a few small industries whose site has been determined solely by the available supply of raw material, such as the clog block-cutting near Lincoln, carried on by a migrant from Yorkshire, and the chair factory at Market Rasen, which was moved from Hull to the neighbourhood of the woods from which the timber is obtained. The saw-mills make up cattle troughs, poultry houses, hurdles, and wagons, and a considerable amount of rived fencing and gates. The 'river', or cleaver, who once made his livelihood by buying ash saplings and making up rived fencing, is no longer found as an independent craftsman, though he is sometimes employed in a mill: this is the only trace of an underwood industry in Lincolnshire. There are one or two small-scale turners in Stamford and other market towns, who make articles for domestic use and retail them from a market stall or a shop of their own.

The large estates, which are so prevalent in this county, employ workmen to make up from their own timber all the gates, troughs, fencing, and other woodware needed on the farms. The greatest quantity of Lincolnshire timber is used by big firms, often from outside the county, such as the Sheffield firm which has bought large tracts of woodland between Brigg and Scunthorpe and set up its saw-mills in the woods, where the timber is cut into planks and then carted to the railway. A great deal of timber which was bought during the War has not yet been felled.¹

In Bedfordshire and Hertfordshire the largest area of woodland is found on the belt of greensand running north-east and south-west through Ampthill and Woburn; the trees are mostly coniferous and very little local use is made of them. There are also a few small clumps of woodland, especially to the south of Hertfordshire, and a certain amount of underwood (as is also the case in Northamptonshire), which gives rise to a few small industries.

The most important of these, from the point of view of craftsmanship, individuality, and antiquarian interest, is the Kingscliffe turnery. Rakes also are made in Rockingham Forest, at Geddington and Weldon, and they are found surprisingly near London, at Uxbridge. Competing demands for labour have rendered this industry, in which so much skilled handwork is needed, no longer profitable. There may possibly be some connexion between the existence of the rake industry here and the extensive hay production which is such a feature of Middlesex farming, although the rake-maker's market is a widespread one.

Hurdle-making is the most widely distributed of the underwood industries of the East Midlands. The location of hurdle-makers follows the distribution of sheep, and a few are also found in Northants and the parts of Huntingdon and Bedfordshire bordering on it, and in the south-eastern corner of Cambridgeshire as an overflow from Suffolk. In all these districts hurdles are used for folding sheep, whereas in Lincolnshire and the Midland counties 'band-nets' (cord nets) are more popular. Wire netting has replaced both hurdles and cord nets to some extent. Big, heavy hurdles, generally having their rails sawn rather than split, are in use everywhere for filling up gateways or protecting ricks or trees. The making of scythe-shafts, ladders, and spits is carried on as supplementary to hurdle- and rake-making.

¹ 1923.

Underwood dealers, who saw the poles into blocks for firewood and make up the small branches into pea-sticks, are particularly numerous in Northamptonshire. They sell their products in the neighbouring villages and towns, and at a time when coal is dear this seems to be a profitable industry. It is comparatively easy for a villager to set up a business of this type ; a small yard or corner of a field is generally available, and for a few pounds he can buy a supply of underwood ; the only plant needed is a small petrol engine to drive a circular saw. Usually he supplies only a local market, but one case was heard of in which pea- and bean-sticks were sent from Huntingdonshire to Yorkshire.

A notable feature of the timber industries of the East Midlands is the group of big mills in the Boxmoor district using timber, mainly beech, from Buckinghamshire. Brush backs are turned and rent oak fencing is made for the urban areas, such as Pinner and Mill Hill, where building is in progress. A clog factory at Southall, a London suburb, was recently closed, and no information was obtainable concerning the sources of its material or the market which it supplied, but no other traces of clog-making were heard of in this district.

In the Fen Country timber is very scarce, the land being too valuable for other purposes. Farmers in the Holland division of Lincolnshire have even grubbed up the hedges and hedgerow timber. Any trees that exist are of little value, and are not used locally in any characteristic industries. Little fencing is required in this district, owing to the fact that the dykes often form the boundaries of fields, and also because little permanent pasture is found. There are saw-mills in Spalding, Boston, Ely, Cambridge, and other towns, which make use of any available supply of local timber and also of a great deal of foreign wood ; their activities are mainly confined to building requirements. At Earith, in the midst of the Fens, there is an unexpected group of small industries, chiefly using willow, almost the only tree found in the Fens, for hurdles, ladder-rungs, and spits.

In Essex there is no great extent of woodland, except for Epping Forest, from which no timber is available. A few industries which have spread from Suffolk over the Essex borders have been mentioned in connexion with East Anglia. The outstanding feature of arboriculture in this county is the growing of cricket-bat willows, which extends also into Suffolk, these being found in the neighbourhoods of Diss, Chelmsford, and Hatfield Peveril, where the trees

are planted in large groves along the railways and streams. There are no bat factories here, but local men, working single-handed, buy the timber and cut from it the 'clefts', or rough blocks, which they sell to London manufacturers.

West Midland Counties

The chief woodland feature of Gloucestershire is the Forest of Dean on the west of the county, between the Severn and the Wye, but it is riddled with coal-mines, and although it still contains some of the finest ash in the country, the greater part of the woods are coniferous, and chiefly used for pit-props. There is no regular supply of coppice and no traditional skill among woodland craftsmen. A big turnery at Longhope on the borders of the forest, making tool-handles, ladder rounds (rungs), peggy-sticks, brush stocks, and also rakes, is the only wood-using industry on the English side. The woods of Painswick Hill and 'Cranham's sober trees', and many another group in the hollows of the Cotswold uplands, supply material for the numerous woodworking factories of the Golden Valley. In these the manufacture of walking-sticks is a special feature, but it is now carried out on a large scale, hundreds of workers being employed, and has none of the features of a rural industry except for the use of local timber, which is now largely supplemented by foreign woods. No coppice-wood is used for the walking-sticks, but a small tool-handle turnery, situated in a mill where the sticks were formerly made, uses coppice-wood to some extent.

The characteristic industry of the Cotswolds, which stretch from near Bath and Bristol in the south-west to Oxfordshire in the east, is hurdle-making. They are an open range of hills, bleak and wind-swept, but in some places bearing clusters of woodland in their hollows and even on their ridges. From the Oxfordshire side the hills are approached gradually with long, slow undulations, but the western escarpment drops with startling abruptness and a steep descent to the fertile plains of Evesham and Winchcombe, to Broadway, Birdlip, Painswick, Pitchcombe near Stroud, and to Wotton-under-Edge. Sheep-farming was a feature of Cotswold farming as far back as the fifteenth century, when the solid prosperity of the Cotswold farmer and wool merchant founded the great tithe barns and the splendid churches for which the district is still renowned. Northleach was the great wool-mart of the district, and the

church, like those of Campden and Fairford, was said to have been 'built of wool'. Some of the great warehouses in which the wool was stored previous to its sale existed when Samuel Rudder visited the town in the middle of the eighteenth century, when it had already fallen into decay.¹ The tombs and brasses of the wool staplers, inscribed with the mark of their guild, or with wool-pack or shears, are noticeable in many Cotswold churches.

Hurdle-makers are numerous, and the Cotswold woods supply them with material. Communication between one village and the next beyond the hill is often difficult, so the industry is in the hands of single makers, often as near to each other as at Bourton-on-the-Water and Fifiold, five miles away, and at Longborough, six miles distant on the other side. Wattled hurdles are made in some places, but the split hurdles can be thatched with straw and thus used for lambing. It is estimated that a farm with 700 sheep on it will have a hundred dozen hurdles in use; the average life of a hurdle may be from five to seven years, with careful treatment. The output of a hurdle-maker may be as many as 150 dozen hurdles in the course of a year.

Worcestershire, Staffordshire, Cheshire, and the southern part of Lancashire are more notable for industrial and commercial activities than for rural industries. Their woodlands are not extensive. Lancashire has been described as 'well wooded but badly timbered', conditions being unsuitable to the growth of heavy timber trees. Some turneries for brush-stocks, near Lancaster, are the only small wood industries of this district. The timber of Delamere Forest, in Cheshire, is of little value and the coppice is neglected. Some of the underwood, being twisted and gnarled, is made into 'rustic' furniture, and rods are sent to the Potteries for crate heads. In a large timber yard at Wellington, where 120 men are employed at busy times, wooden bowls and ladles are turned on the primitive pole lathe, although in the workshops of the same firm modern automatic lathes are also in use. In the same timber-yard is made other woodwork, such as rakes and bushels, which is more often the product of small rural firms. There is a good deal of hand cooperage for Cheshire dairies, and wood-spirit distillation is carried on near the Wrekin in a small factory using up waste wood from the timber-yards and other works.

¹ See H. A. Evans, *Highways and Byways in Oxford and the Cotswolds*, for a description of the ancient wool industry.

There are certain industries using English timber which are found in nearly every district, but which show few characteristics of specially local significance. Some are of the type which is carried on conveniently as a side-line to some other branch of wood-working; of others the situation may be determined by economic considerations having little relation to local conditions, whilst others supply some articles of almost universal use, and although they may show special developments in certain districts, are better described by themselves than under the heading of each locality in which they occur. Of this latter type, wheelwrighting and saw-mills and timber-yards are the chief examples. Wheelwrighting as a rural industry is described in the latter part of this volume in the chapter on 'Some Village Workshops',¹ since its problems and outlook approximate more nearly to those of such other village industries as blacksmithing and rope-making, which exist as supplementary to agriculture in every rural district.

The modern tendency to gather together many branches of an industry into one firm is seen in the case of wheelwrights' shops, in which the installation of a power-driven saw has led to the development of timber sawing for other purposes besides that of cart- and wagon-building. Planks may be supplied to carpenters, blocks to turners, and gradually the various activities associated with a saw-mill may be set on foot. Or, again, a saw-mill may turn out wagon parts to supply to local repairing wheelwrights who have not installed power-driven saws and lathes, and the mill may even develop a wheelwrighting business.

Hand work, however, is, as a rule, eliminated as far as possible from the work of a saw-mill, and so the actual building and repairing of carts and wagons, unless taken up on a large scale, is more often left to the village wheelwright's shop, the saw-mill merely producing shafts, naves, spokes, &c., by machine processes.

The estate timber-yard, sometimes employing skilled craftsmen, has been mentioned in connexion with Lincolnshire; even wagon repairs are sometimes done by estate workmen.

A saw-mill which does no turnery itself may utilize pieces of waste wood by cutting them into blocks for the use of specialized turneries. Thus birch may be cut into eight-sided oblong blocks of various sizes for brush turners; the blocks are turned and then sawn through the middle to make two brush-backs. Long pieces of ash are cut up for

¹ See p. 171.

the mills which make handles for tools or for use in machinery. Many kinds of wood are cut into squares for bobbin manufacturers. Short pieces do for the legs of peggy-sticks. Thick, square blocks of wood are sawn for use as the 'lids' of pit-props (blocks placed on top of the props to help support the roof). Other odd pieces are cut into posts and rails of sizes according to the material, and these are sold piecemeal to farmers for the repair of fences and gates. The rough outer pieces of the tree-trunk, which cannot be otherwise utilized, may be chopped and sold for firewood. They are also sawn into thin strips and used for making boxes of many kinds. But they may also be used as fuel for the engine in the mill, as is sometimes the sawdust. The latter in some districts is sold to fish-curers, who use it for the process of smoking. Local butchers also buy sawdust.

In addition to riving, sawing, carpentry, and turnery, a certain amount of hand work is done by some mills. This includes the making of wooden bushel measures and of the rims or hoops for the chaff-sieves made by basket-makers; yokes for carrying pails are made, together with malt and barn shovels, butchers' trays, bakers' peels, and 'seed lips', which hold the seed to be broadcast, all carved out by hand. In the same way are made the ditching shovels which are used in the Fen Country for digging the soft mud out of the ditches. These are made in King's Lynn. Occasionally this type of woodwork is the sole output of a small workshop, as in a case near Chichester, or it may be combined with turnery.

TIMBER INDUSTRIES

CHAPTER II

RAW MATERIALS OF TIMBER INDUSTRIES

CERTAIN wooden articles may be made either of underwood or of timber, and these are dealt with here rather than in the chapters on underwood industries. For example, bobbin-mills in the Lake District use coppice-wood from Furrless, but near Carlisle they use timber, and elsewhere timber is more generally used. Coppice-wood serves for one type of bobbin, i.e. the reels on which thread is sold; but the 'built up' bobbins used in the mills are best made of timber. Tool-handles also are made of either kind of wood: the 'poles' of underwood are better for handles which must be of great strength, as the heart of the wood forms the core of the shaft, but broom-handles, for instance, which do not need to be so strong, can be turned from pieces of wood cut from big logs. Fencing also is sometimes made from poles, especially when the rails are riven, but the posts are more commonly sawn from timber.

English Woods

The hard woods, i.e. those of slow growth, as oak, ash, elm, and others, which are the most abundant in England, are more used in the wood-working industries than the soft or coniferous woods, which include larch, spruce, and Scotch fir. Some things, such as chairs and stools and many small turned articles, can be made of almost any of the hard woods, but for certain articles only one or two kinds of wood are suitable; thus clogs are nearly always cut by hand from birch or alder, or made by machinery from beech wood. There is a great shortage of ash in many districts, and this is a wood which is invaluable for many different purposes. Wheelwrights and the makers of rived fencing are particularly dependent on it. Certain craftsmen, such as makers of furniture and wheelwrights, deplore the scarcity of properly seasoned English oak. The existing scarcity is partly due to the fact that very little was stored for seasoning during the War, when, owing to the decrease

In imports, all kinds of wood were so scarce and valuable that oak was often used without being thoroughly seasoned. After the War, when many large estates were broken up, there was a glut on the market of unseasoned wood, since the policy of the farmers and others who bought the land was to sell the timber at once.

(Timber which has been properly seasoned is a very important necessity for wheelwrights, since the durability of a wagon depends very largely on the use of well-seasoned wood. But if the craftsman is to buy standing timber and store it to season, he needs considerable covered space for this and must be able to afford to lock up a certain amount of capital for several years. For this reason many small firms find it more convenient to buy seasoned timber from merchants.) The common opinion is that timber for wheelwrighting should be left one year in the round after felling, and then, having been cut up, must be stored for at least another two or three years. For the naves of wheels it should be seasoned for four or five years. For some purposes, however, such as for gates and fencing, it does not need to be seasoned. Beech and birch, in particular, are best used for small turned articles as soon as felled. The chair-leg turner on the Sussex Downs fells and saws a tree as it is required, turns the legs whilst the wood is green, and stacks them to dry. He moves his 'workshop' from time to time, to be near to the trees as they are felled, but in the ten years during which he has worked in West Dean woods he has only shifted his camp three times.

The following is a list of the kinds of timber chiefly used and of the things most generally made from each kind :

Oak is one of the most valuable of woods, particularly for wheelwrighting. Frames of wagon bodies and the spokes of wheels are made from it. Beams and planks of oak are also used in the building of railway wagons and motor bodies. It is used for cleft gate and fence rails and also for sawn gates and posts. For posts its strength makes it valuable, but it is rather heavy for rails, and, if the whole gate is made of oak, stronger posts and hinges are needed to hold the weight than is the case if other wood is used for the rails. Also it lacks the pliability of ash and may break under a strain beneath which ash would only bend. The Cornish scrub oak, which is of poor quality, is largely used for fencing and sometimes for pit-props, but oak is generally too valuable for this purpose.

English oak is valued for furniture-making because of the

beauty of its grain, but is actually little used for this purpose, foreign oak having other advantages.

Although there is amongst coopers a very general prejudice against the use of English oak for barrel-staves owing to some supposed poison in the sap, which is said to give a bad taste to the beer, nevertheless the cleaving of barrel-staves from English oak is now being carried on by at least one English firm, which makes use of the same material for cleft shingles (for roofing purposes, mainly for church spires), and of the waste from this work for cleft palings, spokes, and ladder-rungs. Only the best material, without blemish, can be used for cleaving, and for the barrel-staves and shingles only the butt of the tree is suitable, for perhaps two stave-lengths up. If a greater quantity of suitable cleaving timber could be obtained, the trade in barrel-staves could probably be extended. Two of the largest breweries in the country use English oak staves, so it is evident that there is little foundation for the widely spread belief concerning the 'poisonous' quality of English oak. Oak is also used in the boat-building industry.

Ash is chiefly noted for its pliability and is greatly valued for all purposes where there is a strain, under which other kinds of wood might snap. It is used by wheelwrights for shafts, felloes, and sometimes spokes. For riven fence rails it is unequalled. For heel-trees it is also the best kind of wood. Ash is often used for chairs, particularly for the legs, stretchers, backs, and dowels. A clog-maker in Norwich uses ash, but it is not generally employed for this purpose, and boat-builders make some use of it.

It is very valuable for certain kinds of tool-handles, such as hammer hafts. Two-thirds of the wood used by a large firm in Lancashire for this purpose is ash. Turners use a good deal of ash, particularly for pump-buckets and bobbins.

Elm is another wood much used by wheelwrights; in fact oak, ash, and elm are the staple material of this industry.

Elm is also used for chairs, particularly for the seats. It can be polished to a beautiful honey-colour and is successfully utilized at Broadway for furniture of good and simple design, in which the colour and grain of the wood are shown to the best advantage.

Elm is an important item in the boat-builder's yard. It is also the usual material for coffin-boards.

Sycamore is remarkable for its white colour and is the only English wood which is white enough for the reels on

which silk is wound for sale. It is also used by turners for dairy bowls and smaller bowls, for mangle-rollers, ninepins, and for other small articles in which a clean white appearance is desirable, such as bread-boards, and the Kingscliffe turner carves his butter-prints from sycamore. The seats of some chairs are made from sycamore, and in a large industry at Bideford it is dyed grey for furniture. Wheelwrights use a little sycamore, and it is one of the materials from which walking-sticks are made in the Golden Valley.

Beech is used for a variety of purposes. It is a very hard wood and not easy to work and is therefore more often made up by machinery than by hand. Factory-made clog-soles are generally of beech, but it is said that they are less comfortable than others because the wood, owing to its hardness, does not adapt itself to the shape of the foot, as the other woods will do, with the foot's warmth and constant wear. The men who fasten on the uppers also find it more difficult to drive the nails into beech soles; either the nails bend, or else, when driven in, they are liable to spring out again.

Beech is much in use for chair legs of cheap quality, and the legs turned at High Wycombe from the beech woods of the Chilterns are used by the makers of cheap furniture in towns all over England. Brush-backs are very largely made of it and also cotton reels. The Sussex beech woods also supply a maker of malt-shovels, bakers' peels, and seed lips, and those of the Cotswolds feed the walking-stick factories of the Golden Valley. Wheelwrights make very little use of beech.

Birch is one of the two chief materials for hand-cut clogs, but, of the two, alder is generally preferred. It is easier to drive the nails into birch than into beech and they hold better when in. It is also soft to cut, and birch soles are preferred, even before those made of alder, by the miners in Cumberland. Turners use birch for cotton reels and for brush-backs; the small birch trees which grow wild on the sandy commons round Wymondham in Norfolk supply a brush turnery there. Birch is also made into spoons and taps.

Alder is generally preferred to birch for clog-soles for its greater comfort in wear. It is soft, easily cut, and is considered particularly good for the street wear of Lancashire users. Turners sometimes make bobbins and also chair-legs of alder.

Willow of all kinds is occasionally used for a few of the ordinary purposes, such as chair-legs and ditching shovels,

but the most important use of this tree is in the making of cricket-bats from certain species which are grown for this purpose. Of these the favourite is *Salix alba*, var. *Caerulea*, the White or Huntingdon willow. Another kind sometimes grown for bats is *Salix fragilis*, of which the English name, 'crack willow', indicates the disadvantages. *Salix alba*, on the other hand, is a rather heavy wood. These willows are cultivated in Essex and Sussex.

The number of 'clefts' (blocks from which bats are cut) which can be obtained from one tree varies a great deal. When the tree is felled it is cut into bat-lengths and then each length is split into a number of sectors, each of which is a 'cleft'. As the clefts are split off, the core of the wood is left. The important points in a cricket-bat willow are, therefore, straightness, and sufficient width from the core to the bark. The latter can easily be calculated in the case of the growing tree if the size of the core originally planted is remembered. Even around a crooked core a tree may sometimes grow straight. A very fine specimen, 16 inches in diameter, might be cut into six lengths; from the first length 14 clefts could be cut; from the second, 12 clefts; from the third, 10 clefts; and from each of the fourth, fifth, and sixth, 8 clefts; that is to say, the tree would yield sixty bats. It is, however, unusual to be able to cut six bat-lengths from a tree, and about fifty bats is a more ordinary total; some trees yield only thirty-two bats.

Poplar, a tree closely related to the willow, is also used for making ditching shovels, and near Hereford planks of Italian poplar, one of its varieties, are used in the building of motor bodies. Owing to the great demand for cricket bats, it is often used as a substitute for willow. Bats made from it are of a whiter colour than willow bats.

Among other trees less commonly used, lime is made into spoons and big taps, and is also used for ditching shovels. Maple is utilized for egg-cups and spigots. Holly and hazel are occasionally found in turners' workshops, although they seldom grow beyond the size of underwood; holly is useful for sports goods, and hazel was, in one instance, turned for chair-legs.

There is also a very small and spasmodic demand for crabwood from millwrights for use in the gearing of windmills.

The coniferous or soft woods are stringy and liable to splinter; they are therefore quite unsuitable for turnery, and are seldom used for any other purpose in which they would be worked up by hand.

Larch is used in boat-building, and for certain purposes it is preferred to any other wood. Wheelwrights make use of it occasionally, and hop-posts, which have largely replaced the poles cut from underwood used in the hop gardens, are of larch.

Imported Woods

Even rural craftsmen in small workshops use much imported material either from choice or necessity, while nearly all of the larger workshops and factories use very large amounts.

There are merchants who deal only in English timber, but most of the larger firms sell foreign timber and some sell this exclusively. A fairly large business in a rural district, such as that of a bobbin mill, may not be able to obtain sufficient supplies of timber locally, either from the woods or from merchants, or, even if the former source is adequate, may not have the organization to enable it to buy standing timber.

Foreign timber is very often preferred to English for several reasons, and amongst them buyers regard those following as most important: Imported timber is more convenient to use. It is already cut into planks or blocks and dried, and certain things, such as barrel-staves and wheel-spokes, come ready-made or only needing to be finished. The high cost of cartage is often a hindrance to the use of local timber. Where motor transport is available cartage is usually a less expensive item, but the bad state of woodland roads often creates further difficulties. A Worcester firm which obtained underwood from the Ledbury district, about twelve miles distant, could get material more cheaply by chartering a sailing vessel which took a cargo of coal to Sweden, and with a return cargo of turnery wood for brush-backs, could come right up to the wharf beside which the factory stands. Foreign wood tends to be straighter and less knotty and therefore easier to work. From 1910 to 1914 there was a great increase in the use of foreign wood, followed, of course, by a decrease during the War when there were smaller imports. The cessation of trade with Russia after the War cut off the supplies from many craftsmen, particularly coopers. The lack of supplies from Russia also had the effect of keeping up the price of English wood.

Deals of all kinds, which are the staple material of builders, are also used for toys and sometimes for cart-

bottoms. In some small mills deal was split into laths, for lath and plaster building, but there is not now much demand for riven laths. Deal is also used in boat-builders' yards, as well as teak and mahogany. Teak, satinwood, and boxwood are the foreign woods most in use in bobbin mills; boxwood, which is remarkably hard and smooth, is also used for sports goods. American birch is made into chair-seats. American hickory is valuable for the handles of tools which are used for very heavy work, such as hammer and axe hafts, and for the poles used in railway shunting-yards. *Lignum Vitae*, a very hard South American wood and the only kind which is so heavy that it does not float, is made into bowls (the wooden balls).

Foreign oak, both American, Austrian, Russian, and Japanese, is much in demand among furniture-makers, many of whom consider that English is less suitable for modern methods of construction. Russian oak is used in cooperage, especially for beer, wine, and spirit barrels; the material for the last must be most fastidiously chosen because the strength of the spirits draws out any flavour from the wood. It is imported in the form of ready-made staves, rived by hand, which are used for water-butts, stable buckets, and peggy-tubs, as well as for beer barrels.

Other articles which are imported ready-made and compete with certain branches of English rural timber industries are wheel-spokes of oak, cleft and shaved, and hickory pick-handles, both of which come in great quantities from America; pine wood travels from Canada to Japan to be made into clothes-pegs, which come thence to England.

Other Raw Materials

The rural craftsman producing wooden articles uses many materials besides wood, and even for his main raw material he does not necessarily use timber fresh from saw-mill or store. Some small-scale rural coopers who make peggy-tubs buy from the breweries such of the imported staves as are too thin to be used for beer-barrels, but which are strong enough for the wash-tubs. Coopers also buy old butter-tubs, oil-barrels, or lard-barrels and convert them into wash-tubs. Wooden hoops are used on these tubs as the rust from iron ones would stain the clothes washed in them.

The leather uppers of clogs, which are sometimes put on by the same man who cuts the sole, are made of the cheaper

kinds of leather, because wearers of clogs are not willing to pay the higher price which would be necessary if the best leather were used. Nevertheless the uppers must be strong in order to hold the heavy wooden soles. Split leather, or 'kips', is often made into clog uppers.

A clog-maker in Shropshire has a special and very advantageous source of supply for uppers. A strong, thick, and supple leather is used as a covering for rollers which are a part of the machinery in a local woollen mill. This leather covering has to be renewed as soon as it wears thin in one place, and it is then cut off the roller and sold to the clog-maker in the neighbourhood. The leather is impregnated with oil, which makes it soft and waterproof, and the worn parts can be cut away. It is, of course, much cheaper than new leather. In other districts clog uppers are sometimes cut from old boots.

CHAPTER III

PROCESSES, TOOLS, AND TRADE ORGANIZATION

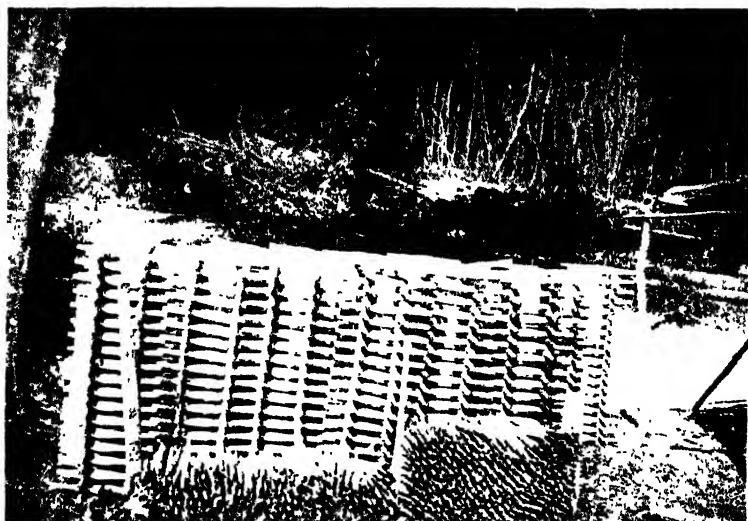
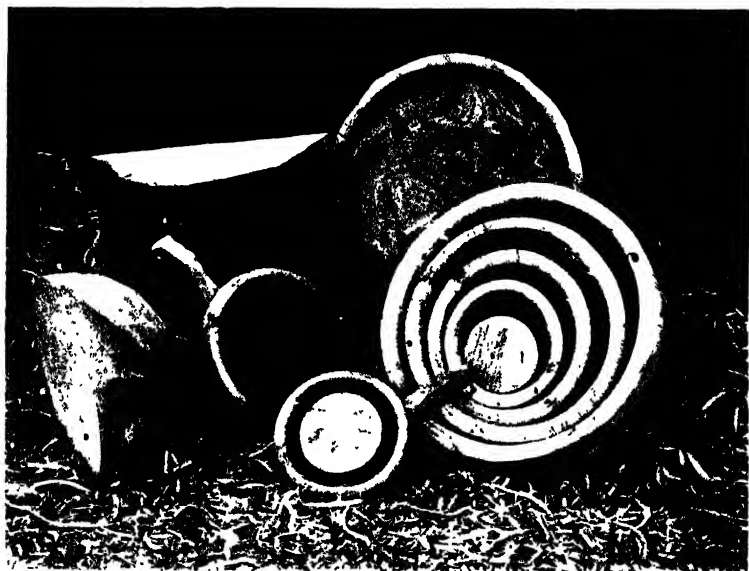
TURNERY AND FURNITURE-MAKING

Types of Work

TURNERIES of various types occur in every district. In a town of any size there is generally a jobbing turner, working for manufacturing firms; he makes chair- and table-legs and rungs, furniture knobs for cabinet-makers, naves and hubs for wheelwrights, ladder-rungs for carpenters, dolly-pins (peggy-sticks) for retail sale, and mangle-rollers to replace old ones which are worn out.

Another type is the small-scale manufacturing turner with a varied output. The turner used to supply the local demands of town and country people, selling his goods from a market stall or a small shop. This type of industry tends to die out, for many of the things the turner made have gone out of use or are now replaced by metal goods. Some of the chief items in his output were bowls and churns for dairy use (the latter, though the making of them is really cooperage, having often formed part of the turner's work). The bowls are now largely replaced by tin or enamel ware. In Yorkshire scutching cleavers and swingle-stands used in the preparation of flax by hand were lately made in turneries, but the preparation is now done only by machinery. 'Musical work', including drumsticks and tuning-forks, for a rather wider market, once formed part of the output of some turners, but is now supplied from Germany. Another quaint and now obsolete item of a turner's output was the 'biscuit docker', a disc of wood with a handle and short pieces of wire inserted into the disc; it was used for pricking the holes in biscuits.

Some of these small workshops remain in the market towns, producing mangle-rollers, rolling-pins, peggy-sticks, spoons, bowls, stools, skewers, clothes-pegs, and egg-cups. The most notable is the Kingscliffe turnery, the sole survivor of a flourishing group, where the turner has had to take to making taps and spigots and pump-buckets wholesale for plumbers and other town firms, because the gipsies who



SOME TURNERY PRODUCTS
BOWLS AND CHAIR LEGS

used to hawk his wares about the country seldom come to buy from him now. In the butter-prints still made by him is seen a survival of the application of the skill of the artist-craftsman to things of everyday use, but there is no longer much demand for these.

There are, however, new openings for the turner with a capacity for invention and artistic design who can get into touch with a certain type of market. One man in the West-Country has earned a reputation as a maker of shuttles for the modern hand-loom weavers, this work needing considerable skill and delicate craftsmanship; it is probably through his connexion with these handicraft workers that he also finds a sale for simple but well-designed and carefully finished wooden bowls and candlesticks.

This type of workshop has good opportunities in the variety of its output to use up all kinds of wood and all waste pieces. Perches for bird-cages and bungs for barrels, skewers and clothes-pegs fill this useful role, and the turner seeking some outlet of this kind for his goods must let his fancy wander widely over all the possible uses to which turned wood may be put. A King's Lynn turnery steps into the breach when the skittle-alleys lack ninepins; pump-buckets and bottom boxes (for the top and bottom of a well-shaft) are supplied to plumbers, and plough handles to implement factories. One mill produced a small wooden peg, which the turner advised the investigator to describe as a beast tie-peg, 'because then every one will know what you mean'. It may be as well to explain that it is supplied to rope and halter-makers to be inserted into one end of a noose halter, which is held fast by the peg slipped through the loop at the halter's other end. Other kinds of small wooden pegs are 'ferules' and 'tree-nails', used in laying down railway lines and in shipbuilding. A demand peculiar to a certain locality is that for 'fishermen's rollers', which are used on the east coast on the bottom of shrimp nets; they are hollow cylinders, about 8 in. in length, through which the chain is passed to scrape off the mud and weeds. They are made at King's Lynn. A feature of some mills in more urban areas is the production of the stands used in drapery and millinery shop windows to display hats and other goods. The waste of a bobbin turnery at Liverpool is burnt for charcoal, the small powdery pieces from this source being used in Faversham powder-mills together with that from larger wood.

Turneries which specialize in the production of one type

of article are generally on a large scale, but have often developed from small businesses and remain in the rural area in which they originally settled to be near the supply of wood. There are a few small ones which supply some particular and limited demand, such as the bowl (ball) turnery at Framlingham and a firm at Exeter which also makes bowls and other sports goods, such as cricket stumps and croquet balls. At Gloucester there is mass production of penholders and incubator legs, an industry in no way rural. But perhaps the three most important types of specialized turnery still found in rural districts, generally on a large scale but occasionally also in the form of small workshops, are for brush-backs, bobbins, and tool-handles. Sometimes these things form part of the multifarious output of general turneries, but many mills specialize in one or more of these branches of work.

Brush-backs are turned in all parts of England where there is a supply of suitable wood, either timber or coppice, birch, beech, and alder being specially used. They have already been mentioned in Norfolk, the Sherwood Forest, Wiltshire, the New Forest, Boxmoor and the neighbourhood, the Lake District and South Lancashire, Devonshire, Shropshire, and there are a few isolated examples elsewhere. Sometimes they supply a special local demand, as is the case with the small brush turneries of Lincoln which make the backs of the brushes used in the threshing-machines manufactured there.

The turning of brush-backs is usually done by separate firms which supply the stocks to the brush-works, where the bristles are put in. At one time there were many small firms of this kind, but the increased use of machinery, which for certain types of cheap brushes, such as those used for scrubbing, has superseded hand-work, is causing the change of the industry into one carried on in factories. A woman could make two dozen scrubbing-brushes in a day, whilst the machine turns out several gross. The bristles are imported and bought from London dealers; cheaper foreign wood is being increasingly used for the stocks, and all these changes tend to localize the brush industry in towns, and the turneries follow. There still remain some small brush-works, supplied with stocks by local turners, in Truro and Bath, in the small towns of Nottinghamshire and Leicestershire, in Canterbury and elsewhere. * .

Bobbin turneries are generally found in the vicinity of textile factories of all sorts, which they supply with various

patterns of bobbins and reels. The bobbins being needed by large firms in great quantities, and being a type of article in which mechanical exactitude is, in many cases, of the utmost importance, the making of them is now chiefly centred in large mills, although small bobbin turneries were once numerous in the Yorkshire dales and the Lake District. The bobbin turneries in these districts have already been mentioned; there is also one at Longtown on the Scottish border, which obtains local timber, and others in the Midlands, which include, under the general name of bobbins, button-moulds, blind-pulleys, and turned devices for the ends of blind-cords.

Tool-handles may be turned from timber or underwood, and this turning is often supplementary to the making of brush-backs. They also form part of the output of small underwood industries, being, in this case, made of poles, straightened and shaved smooth, but not turned. Certain handles, such as 'fork-stales', for pitchforks, which have to be of great strength, and scythe handles, which have to be bent into their peculiar curves, are invariably made by the small hand-working industries. But handles for brooms, for tools, and for use on machinery are becoming the monopoly of factories. The use of foreign timber for tool-handles is also increasing. The mills, both large and small, of Cumberland and Lancashire, which were originally established near to their supplies of underwood and timber, now obtain their raw material largely from the United States of America, through Liverpool.

Other wood industries which are found in all parts of the country and have little relation to any special rural conditions in their locality, are those of furniture-making, toy-making, and cooperage.

Apart from the urban cabinet makers and large-scale furniture firms, there are a number of furniture industries which may be considered as of the rural type in that they are small workshops and that many of the processes are done by hand. A certain amount of locally grown timber is sometimes used, but, since it is more often obtained ready sawn from mills and foreign wood is also utilized, the woodlands of the neighbourhood are seldom an important factor in determining the situation of the industry. Herefordshire cabinet makers do not make use of the excellent oak grown in the county.

The success of certain small-scale furniture firms seems to prove that there is a market for serviceable furniture of good

design, well made by hand, although other instances show that the maker may fail to get into touch with a suitable market and be unable to dispose of wares for which there is undoubtedly a demand.

Examples of industries producing ordinary cheap furniture, but which still retain some rural characteristics, are seen in three firms in Lancashire and Yorkshire. At Chipping, a small village on the edge of the Bleasdale Moors in Lancashire, five miles from a station, an ancient chair-making industry still survives in modern form. Wood is obtained near by, water-power drives the lathes. Until about twenty years ago the chairs were made by independent craftsmen in small workshops, but the work is now carried on in a factory although still done on the same lines. The chairs are chiefly cheap kinds of the Windsor pattern or rush-seated, but a few copies of old Jacobean furniture are also made. On the Yorkshire side of the same moor and mountain tract, chairs and stools are made at Addingham and Ripon. The Addingham firm has a big up-to-date mill, with automatic lathes; the other is a small mill, using water-power and hand-turnery. Both make cheap varnished wooden chairs and stools. In Selby there was also a firm making substantial and well-designed oak furniture, gate-legged tables and a chair famous 100 years ago as the 'Selby Rocker'; but the manufacture of this type of furniture has ceased and the sole surviving representative of the firm does jobbing turnery.

The mass production of cheap furniture by factories has confined the demand for this type of rather heavy furniture, hand-made and well finished, to a limited class of persons, so that the situation of the industry becomes of importance. If the workshop is in a small country town or a neighbourhood mainly industrial, the maker will not find any outlet for these products, unless he has connexions with the right type of wholesale firm or retail shop.

At a saw-mill near Leamington the making of hand-turned rush-seated chairs has recently been taken up again by a man who was once one of the group of craftsmen organized at Sapperton in Gloucestershire by the late Mr. Gimson. This gentleman, an architect by profession, encouraged the village carpenters, smiths, and other 'tradesmen' of his district to produce good hand-work of original design, whilst he put them in touch with suitable markets. At Mr. Gimson's death the group dispersed.

There are other small industries making furniture of the

more expensive type, of which the chief value lies in the good workmanship and reliable material and individual character. One such firm is at Broadway in the Cotswolds, and another near Bromsgrove. In the former case the workshop is the appanage of an hotel noted for the beauty and antiquity of its buildings, and there are excellent opportunities for the sale of furniture to the many residents and visitors who are attracted to this picturesque village. Near Bromsgrove the furniture-making and a hand-spinning and weaving industry have been organized by a lady who initiated the work to provide beautiful things for her own use, but who is now developing it on commercial lines.

Small industries for the repair or production of 'antique' furniture are sometimes found. A timber merchant in Shropshire buys the old beams from cottages which are pulled down, and of them makes furniture, the designs of which are copied from some 'period' style. In Essex, also, a man buys beams and other old oak fittings from cottages, and of this material makes furniture of the 'antique' type but of original design. In East Dereham a speciality is made of renovating antique furniture.

A small industry, owing its existence to a special local demand, although it can hardly continue unless it also finds a wider market, is one recently started in a Huntingdonshire village, to make oak stools with rush seats. The work is done by an engineer with a small motor-repair shop and automatic lathe, and is at present on a very small scale.

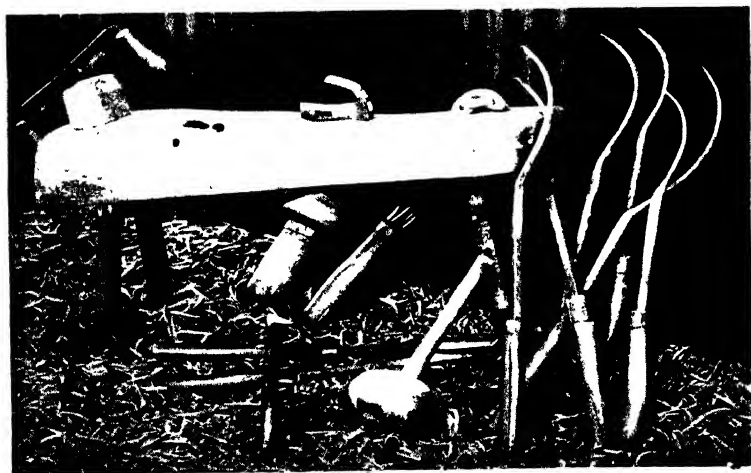
The making of rustic furniture, to which the gnarled and twisted branches from oak timber or underwood give its so-called rustic character, is carried on in Devon and near Delamere Forest, where timber, of poor quality but suitable for this type of work, is obtainable.

The making of wooden toys is carried on as a side-line by several wood-working firms, but the material used is generally imported. A joiner and cabinet-maker in a Cumberland colliery town makes wooden engines of a very rough type for local sale; in a market town of the East Riding of Yorkshire another cabinet-maker produced a similar kind of toy, well put together, with solid turned 'boiler', but has not found this work sufficiently profitable to continue it, though he obtained wholesale orders. At Brockenhurst in the New Forest, at Maidstone, and other places, toys are made from the waste material of turneries.

Processes and Tools

Probably the most important turnery from the point of view of craftsmanship is that at Kingscliffe. The skill of these turners and the appropriateness of their special tools were notable more than a century ago. The surviving turner still buys his trees in the round, has them carted to the field in a corner of which his workshop stands, saws them by means of hand labour, and splits them into blocks. The blocks are then 'shaved' or cut into a rough outline of the shape required, ready for turning, by means of a knife like that used by a clogger. A treadle-lathe is still used, for although steam-power was introduced by some of the turners in the sixties, when the industry was still flourishing in as many as forty or fifty workshops, its use was discontinued later when it became a difficult matter to scrape together the scantiest livelihood from the business. Various 'hooks', used to shape the wood as it is turned on the lathe, are made out of old files by the local blacksmith, who is skilled in the fashioning of these tools. Amongst other purposes for which special tools are used are the hollowing and cutting the inside screw of a tap. The outside screw on a spigot is cut with a gouge, and a chisel is used for some work. An implement known as the 'knife' is used to hollow out the bowls of spoons. It consists of a blade, bent in the shape of a bow and fastened at its ends to rods revolved in a special lathe. The wood from which the spoon is to be cut is held in a vice beneath this and can be screwed higher or lower as required.

The labour is, of course, the chief item in the cost of turned articles. The material is of comparatively little value, especially as most of the things made are quite small. But even the simplest thing passes through the turner's hands several times, and it can easily be imagined that considerable skill is required to shape, by means of a tool held in the hand, the block of wood which is rapidly revolving in the lathe. Great versatility is also required when, as is the case in the Kingscliffe turnery, a number of different things are made. The turner's skill is different from that of the factory hand, who may attain to great quickness and dexterity in one simple operation which he is often unable to apply to other work. The turner must understand thoroughly the use of all his many queerly shaped tools, and how every kind of curve may be most quickly and cleanly cut. He must understand the texture of the different



THE BOWL TURNER AND HIS TOOLS

kinds of wood with which he works, the most suitable uses for each, and the most economical ways of cutting it up and of dealing with the irregularities of its grain and knots.

A description of the different processes which go to the making of an ordinary tap and its spigot will show what an amount of labour must be expended on many turned articles. The processes are as follows :

1. Sawing the log.
2. Splitting the wood into blocks.
3. Shaving the blocks into the rough shape required.
4. Boring the hole through the tap from end to end.
5. 'Nosing', i.e. boring the other hole through from side to side.
6. 'Scouring', i.e. enlarging and trimming the hole.
7. 'Heading', i.e. squaring the four faces.
8. Turning.
9. Hollowing, i.e. cutting the inside screw.
10. The second scouring of the mouth of the screw-hole at both ends.

The spigot, the wooden screw fitting into the tap, has next to be made, the processes being as follows :

1. Sawing.
2. Splitting.
3. Shaving.
4. Turning.
5. Screwing, i.e. cutting the screw on the outside.
6. Flatting.

The cutting of the inside screw of the tap and of the outside screw on the spigot which must fit into it, done with the simple hook and gouge guided only by the turner's eye, needs particular care and accuracy.

The turner also makes butter-prints, round discs with turned handles, the lower side of the discs being carved with a design which is thus impressed in relief on the butter pat. The designs are simple, often the figure of a cow, deer, or swan, and naïve in outline, but there is artistry in the way in which they are blocked out in the space they are designed to fill and good craftsmanship in the few clean strokes with which they are cut.

Wooden bowls of several small sizes are made by this turner 'board-way', that is to say with the pith of the wood running through the centre of the bowl. Bowls made in this way cannot be cut out in a nest, i.e. one inside the other. The big bowls which are made in nests must be cut

but 'in the round', that is to say that in the tree-trunk the piece of wood which is to be cut out into a nest of bowls would lie with the opening of the potential bowl towards the pith of the tree. The Kingscliffe turner does not make these large bowls, but they are turned from sycamore on a pole-lathe in a big timber-yard at Wellington, Salop. By this method the wood from the centre of the bowl can be cut out in a piece and another bowl made from it, instead of being shaved away to waste, and when big bowls are made, such as those for dairy use, the saving of wood is considerable. The bowls made at Kingscliffe are so small that the bulk of wood cut out of the middle is not great and would probably, in any case, be too small for another bowl to be cut from it.

There are few turners now who do all their work by hand. More often an engine has been installed to drive a saw for cutting up the wood and to revolve the lathe, although the shaping of the wood may still be done by a tool held in the hand. There are some cases, however, in which the treadle-lathe is still in use, although the turner usually buys his wood ready cut into blocks. The turner of bowls (for the game of bowling) at Framlingham uses a treadle-lathe; the bowls are made of very hard wood and each one takes a day and a half to turn 'going hard at it'.

The primitive pole-lathe is still found in use here and there. It is particularly adapted for work in the woods because of its simple construction and the ease with which it can be moved from place to place. A young sapling is fixed in a slanting position, supported by a post and having its butt-end weighted by a bucket of sand: a string is stretched from its tip to a foot-treadle on the ground. The wood which is to be turned is held between two metal points fixed to uprights. The taut string is given a twist round the wood, which is thus revolved by a pressure on the treadle, the sapling acting as a spring. As the treadle is released the wood, of course, revolves in the 'opposite direction; but the turner, who sits on a low bench, can only use his chisel for the shaping of the wood during the downward stroke of the treadle. When the sapling is worn out it is easily replaced. A pole-lathe is also used by a jobbing turner in Coventry who makes a few chair-legs and rungs for local cabinet makers. There is another in the workshop of a Warwickshire rake-maker which is used for rounding the ends of rake-handles. Yet another is in use in a very big sawing and wood-working mill at Wellington for turning

sycamore dairy bowls and ladles, arranged so that two men can together work the treadle when the biggest bowls are being turned.¹

Hand-turnery on a power-driven lathe is done by many of the small jobbing turners and, in fact, in any small-scale turnery industry. This kind of lathe is often used in a big turnery for a small job for which it is not worth while to set the complicated automatic lathe. An unskilled worker can make ten chair-legs on the automatic lathe whilst the skilled turner cuts out one on the other lathe with his chisel, but considerable engineering skill is needed to set the former for each pattern which it is to cut.

Even the commoner sort of furniture is sometimes hand-turned, as is the case at Chipping and at Ripon, where cheap varnished chairs are made for sale in colliery towns. Hand-turning is also frequently employed for brush-backs, toys, and the multifarious output of the country-town turner who supplies the neighbourhood with mangle-rollers, wooden spoons and bowls, peggy-sticks, egg-cups, and so forth. Things such as tool-handles and tree-nails, of simple design and produced in great numbers, are more often automatically turned.

Automatic lathes are of two types, one being fed by a man who moves a lever and inserts each piece of wood to be turned; the other being fed by machinery, in which case one man or girl can tend a number of lathes. This is a very complicated and expensive machine and is only used in highly specialized factories, such as the bobbin mills. It can only turn a simple shape, but does so at a great speed. A pump-bucket, for example, must be turned by hand.

The copying lathe is another type used in automatic turnery for cutting out difficult shapes, such as that of an axe-shaft, in which a certain curve must be accurately obtained. A lead model of the shape to be turned is made, and a lever, following the contour of this, guides the knife which cuts out an exact replica. This facilitates the turning of more elaborate patterns by an unskilled hand. But the copying lathe, like the automatic lathes, is a complicated machine and hardly suited to the use of the rural craftsman.

The rollers fitted to mangles or wringers by the manufacturer are automatically turned, but the hand-turner is often called upon to make new ones to replace those which are worn out. Machinery gives a scraping cut, whereas

¹ Cf. the use of a pole-lathe for elm bowls on Bucklebury Common, *The Rural Industries round Oxford*, K. S. Woods (Clarendon Press).

hand-work gives a shearing cut and a smoother surface ; but here, as in the case of furniture, varnish hides the deficiencies and the machine-made article serves its purpose.

Automatic machines for cutting out brush-handles were considered a failure by one firm which tried them. Most brush-handles and backs are turned, but the handles of blacking brushes are cut out with a band-saw, the sharp edges being shaved off afterwards with a plane ; when the wood is moist this can be done with a single stroke.

A shaver, or veneering machine, the same as that used for making chip-baskets, can also cut out sieve-hoops, the hoops for toy drums, veneers (the thin strips put between the brush-back and the bored piece in which the bristles are fixed, which makes a dark or coloured stripe round the edge of the brush), and the strips for bushels. The machine only needs to be set at different widths for these various purposes.

Bushel-making was at one time carried on in many places, as a side-line by saw-mills or by the makers of shovels, bakers' peels, and other wood ware. Before the veneering machines came into common use the strips of wood of which they are made were split off by hand. The history of the decline of the industry is rather extraordinary. Regulations were made, ordaining that wooden bushels must have metal rims, so that they would not so easily wear down or become chipped at the edge and so give short measure. This is no doubt a benefit to the customer who buys corn by the bushel, but it has nearly exterminated the bushel-making industry by the added life these rims impart to the utensils. They now seem to be made only at one saw-mill in Wellington.

Machinery on the same principle splits wood for the staves used in dry coopering, but a machine suitable for hard wood will not do for soft. Machinery of this type, which can be adapted to many different uses, is obviously suitable for the small wood-ware factory, which should have a varied output in order to use up all material to the best advantage and to meet the demands of a variable market. A good deal of miscellaneous hand-work is done in many saw-mills and wood-ware factories. Rake-bows and the curved backs of children's chairs are both bent by the same process, which is described below.¹

Malt-shovels and yokes for carrying pails are scooped into shape in one piece ; but the concave seats of office stools are made in one mill at least in two pieces, so that the initial

¹ Underwood Industries, p. 124.

hollowing process may be done with a band-saw, thus saving skilled labour. The two pieces are then joined together with wooden bolts, and a skilled man finishes the work with a spoke-shaving adze.

The hand-made furniture of the industry near Bromsgrove is carved, painted, and gilded. The oak and elm furniture of Broadway is made entirely by hand, but there seems to be no reason why power-driven machinery could not be employed for some of the sawing and other elementary work. The particular type of buyer whom it is designed to attract probably likes the medieval flavour of the idea that the furniture is untouched by machinery. The elm is polished to a beautiful honey colour which contrasts well with the dark colour of old beams; the oak is unstained, polished with wax, and left for time to mellow.

A suction-gas or steam engine is often used to drive saws and lathes, and can be stoked almost entirely on the waste from the shop. In a mill in which eighteen men are employed on sawing, a suction-gas plant fed with sawdust and waste wood now supplies the power formerly derived from a steam engine at a cost of £400 per annum for coal alone.

If wood is bought ready sawn, as in a toy-factory, and only lathes and a band-saw are used, much less power is needed, and a small petrol engine may serve very well.

Where electric power is available this is often of great utility to the small workshop, and the electric lighting is almost as valuable to the craftsman as the power to drive his machinery. In Herefordshire a scheme to supply rural districts with both light and power from the plant at Hereford has already benefited several small industries.

Trade Organization

At Kingscliffe there are no employees, probably owing to the fact that for many years before the War the turners had only been able to earn the most precarious livelihood. The present earnings show some improvement, although it is difficult to estimate them exactly. The turner's procedure when making taps and pump-buckets, which constitute a large proportion of his output, is first to prepare enough blocks for the number of articles required, then to bore them all, and so on, completing each process for the whole number before proceeding to the next. He therefore found it difficult to say how long they take to make, but he thought that he might complete from two to three dozen taps in

a day. He used to sell these (the small size) for 1s. a dozen, but they are now 4s. a dozen. He makes two dozen egg-cups in an hour, about 200 a day; he once made 391 in a day, but this was a record and he does not remember how many hours he worked. Egg-cups are now retailed at 2d. each or sold wholesale at 12s. a gross. He considers that it is now possible to make a good livelihood in the industry. Apparently he can produce goods to the value of £3 12s. to £4 16s. in a week, the cost of the material used being comparatively small.

Boys and women can be employed on automatic lathes, but one employer complained that boys ask nearly as high wages as men, and women need 'decent conditions'. In some mills which make chairs, girls are employed for the varnishing.

The extinction of many small bobbin mills in competition with larger firms which can afford to instal expensive machinery embodying all the latest improvements, has already been referred to. Some of these big mills have been founded by the firms which manufacture cotton. The largest firm of manufacturers of sewing-cotton, who used to obtain bobbins from various small mills, now have a large bobbin factory of their own in which foreign wood is used. Another large firm also has several mills making bobbins both for their own use and for sale.

In brush turnery, again, the increased use of machinery and the constant improvements made in it tend to concentrate the industry in the hands of large firms, although some kinds of brush turnery are still carried on successfully in connexion with saw-mills and wood-dealing and by small wood-ware factories. The small turneries with miscellaneous output are still numerous in some districts, especially in the Midlands, where they are comparatively prosperous, although few young men are to be found working in them. Things for household use are their main output. Tool-handles, which used to be made by these turners, are now imported in great numbers and are also made in England in large specialized factories.

There are also the jobbing turners employed by building or cabinet-making firms, who, if they have their own workshops and lathes, may do work for private orders, such as mangle-rollers, in their spare time.

COOPERAGE AND HOOP-MAKING

Types of Work

Cooperage is an industry in which little use is made of English wood and which tends to develop on factory lines, cutting out the rural worker; but it shows points of special interest in comparison with other small repair and manufacturing workshops in country towns and in its relation to other local industries or economic conditions. In many districts, such as the East Midlands and the south-western counties, almost the only hand coopers who remain are employed in breweries, chiefly on repairing work, but elsewhere some special article for local use is still made by independent coopers.

In the northern counties and in the Midlands cooperage, especially the making of peggy-tubs, is often carried on side by side with turnery. In Carlisle, Evesham, and elsewhere the peggy-tubs are made from empty oil, butter, and lard barrels, bought from factories in the neighbourhood. Coopers occasionally have an order for water-butts or churns, but in certain districts a considerable amount of dairy cooperage is done by small firms, particularly in Cheshire. At one time there were one or two in almost every town in Devon, but few remain. Some cheese-makers prefer wooden tubs in which to press the cheeses, and still use the old-fashioned 'up and down' churns.

Barrels for ~~cider~~ are made in Herefordshire, and some coopers make small 'fancy' wine-barrels for wine and spirit merchants. At Leicester there is hand coopering for the Liverpool oil trade.

Stable cooperage is found in some Midland towns. On large estates and in hunting and racing stables, wooden buckets are still in use. But except for these purposes, the cheaper buckets of galvanized iron have replaced the wooden ones, so these coopers are only found where there is a special local demand, as at Melton Mowbray and Newmarket. A wooden stable bucket will outlast a man's life-time, but it should be repainted and overhauled for repair every year or two. In Newmarket the amount of work of this kind is not enough to keep one cooper busy, his main occupation being that of carpentry and joinery, with cooperage only as a side-line.

The output of Suffolk coopers includes—in addition to

churns—butter casks, stable buckets, and a small oval tub known as a ‘killer’, and used for the washing of delicate china and silver.

Processes and Tools

Practically the whole of the slack, or dry, and something like four-fifths of the wet coopering, is done by machinery. Dry cooperage is the making of casks or kegs for apples, lead, flour, fish, ironware, china, and any substances other than liquids. Wet cooperage is the making of tubs for dairy purposes, or wash-tubs, water-butts, stable-buckets, and wine, beer, or spirit barrels. Many coopers believe that machinery for cask-making will soon be universally used, but a Cheshire cooper who makes cheese tubs says that he has tried in vain to get suitable machinery for this very skilled work. Most of the barrels used in breweries are made by machinery, but hand-coopers are employed to repair them.

Iron hoops are generally used in wet cooperage, the coopers buying hoop iron and making up the hoops. In such districts as in Cheshire, where a great deal of dairy cooperage is done, the ordinary ironmongers of the market towns stock the hoop iron; this is also used for the repair of cheese moulds from time to time.

Wooden hoops are used in dry cooperage. In some cases this is for special reasons; for instance, on gunpowder kegs (now very seldom used) wooden hoops are essential because of the danger of sparks being struck from iron. On wash-tubs wooden hoops are used because the rust from iron hoops would stain the clothes, but this is the only example of the use of wooden hoops in wet cooperage. The light casks which are made for packing purposes have to be as cheap as possible, as they are thrown away after being used a few times, and a number of wooden hoops distributed up and down the length of the staves protect and hold them together better than two or three iron hoops, and are also cheaper.

Dry cooperage is the less skilled branch of the craft; the staves, which are sawn, can be obtained from a mill; they are less tightly wedged together than in wet cooperage, and the casks are less bulged. The staves used in wet cooperage must be cleft by hand, and a great proportion of them come ready-made from abroad.

The work in wet coopering must be very careful and exact, the staves fitting compactly and tightly together and being firmly held by the iron hoops, so that the barrel is

water-tight. The staves are in shape much narrower at the top and bottom than in the middle, and, being bent so that they fit closely together, the cask is bulged in the middle.

Trade Organization

In cooperage there is a shortage of apprentices; in the small business it seems to have been generally an hereditary trade, and a number of coopers still have sons working with them. But there are also numerous small shops in which there is neither son nor other apprentice. The reluctance of boys to take up this work is due probably more to the fact that, especially in wet cooperage, it is of a very strenuous nature, rather than to a poor rate of pay, for the earnings seem to be pretty good, although there are records of extraordinarily long hours having been worked in pre-war days for very low wages. Many of the small coopers now seem to be quite prosperous. A cooper in the Midlands in 1921 said he could earn from £2 to £3 in a 48-hour week. A Cheshire cooper at the same time could earn £5 10s. weekly, but he was doing particularly highly skilled work. The best coopers are said to have been attracted to the breweries, where more money can be earned.

Many different types of organization are found in the hand-coopering industry. Coopers are frequently employed by breweries and fish merchants. A firm of fish merchants in Berwick finds it very economical to employ the hands on cooperage, making fish-barrels, during slack fishing seasons in the winter, and before the boats come in at 3 p.m., when all hands are needed for unloading and are sure to be ready on the spot if there is other work to keep them busy until that time. Part-time coopers may be carpenters or may make up a living in many diverse ways. In a northern seaport a repairer of masts and pulley-blocks combines this work with the conversion of old barrels into peggy-tubs. Some of the men employed in a biscuit factory profitably spend their spare time in making these tubs out of old lard barrels bought from the factory.

A side-line to coopering is often the smoking of hams for neighbouring farmers, this being done with the help of the oak chips which accumulate in a cooper's workshop. He often has a large open chimney built specially for this purpose.

In the mining districts of the North the 'flying cooper', who travels with his tools on his back, finds plenty of work in the repairing of the peggy-tubs so universally in use among the miners' wives.

CLOGGING

Processes and Tools

Clogs are the wooden shoes with leather uppers which are worn extensively in the agricultural and industrial districts of the north of England, and, to some extent, elsewhere. They have light grooved irons underneath the edge of the sole and heel, which can be replaced when worn out; a piece of leather is sometimes nailed on the sole inside the irons to deaden the clatter. The clogs are made large enough to allow for the freedom of the feet inside, being kept on by laces or by buckled flaps. Some are lined with felt. They are not uncomfortable, nor are they unduly heavy compared with thick boots, and it seems to be due to fashion rather than to comfort that boots have replaced clogs when wages have been high enough to meet the extra expenditure involved.

The timber from which clogs are to be made is sawn in the woods by hand, or at a mill, into fixed lengths of four sizes—men's, women's, boys' or 'middles', and children's. It is then split or rived with an axe and mallet into blocks, which are cut out with the clogger's knife into what is roughly the shape and size of the clog-soles. In the Midlands this process is known as 'breaking up'. If coppice-wood is used, as it is occasionally, it has only to be sawn into lengths, each of these sections of the pole then being trimmed with the knife.

This knife is made of one piece of steel, about 2½ feet in length, bent to an obtuse angle in the middle, the lower half forming a blade about 4 inches deep, the whole terminating in a hook. This hook is fastened into a ring on a wooden post, driven firmly into the ground and forming one of the supports of a low bench. The cutter grips in his right hand the wooden handle of the knife, which is set at right angles to the steel; with his left hand he holds the block on the bench, moving it as required, and, stooping, cuts it into shape with downward strokes of the knife, made with remarkable certainty and rapidity. In a Shropshire clogger's workshop a saw driven by a small engine is used instead of the knife to shape the block, but the knife is always used when the work is done in the woods.

Truck-loads of the rough blocks are sent off by train from the Shropshire woods to Lancashire, where they are shaped in the workshops. Elsewhere the men who cut the



CLOG BLOCK CUTTER

blocks in the woods in summer may finish them at home during the winter months.

The final shaping is done with three knives, similar to the one used for cutting blocks. Those seen in Durham were curved and the free end terminated in a long curving metal bar for a handle. The knives are used for the three processes of shaping, hollowing, and grooving, and they were called by an East Anglian clogger the 'straight', the 'hollow', and the 'grip'. The craftsman has great skill in the use of these knives and he seems to know by instinct the exact curve which is needed for comfort and with very little measurement is able to make the right sizes.

In making the uppers a stretching machine is used to shape the leather so as to give the necessary spring for the instep. Uppers are made in two pieces only, a third piece inside giving strength to the heel. A sewing machine, such as boot repairers use, is employed to fasten the pieces together; the upper is nailed to the sole, irons and fastenings are put on, and the clog is complete.

The hand-made clog has three main advantages over the machine-made kind: it is made of alder or birch, which are better for the purpose than the beech of which machine-cut soles are made; from the first splitting into blocks the grain of the wood is followed and therefore the clogs have more strength than those made in factories, which are sawn and therefore more liable to split; and, lastly, the shape of the foot is better followed by the clogger's knife than in the stereotyped simple curve which is the best that the saw can cut, and so the hand-made soles are more comfortable. But machinery for clog-sole cutting is a fairly recent invention and improvements are expected.

Trade Organization

A definite shortage of skilled men in the clogging industry was reported, both in the industrial areas of the Midlands and the northern counties and also in the more rural districts of the south-western counties. Clog-making workshops are now small and scattered, so in the event of a man losing employment in one he would have far to go to find other employment in the trade. The training is a long one; one master stated that it takes ten years to learn the whole art of sole-cutting, that is to say, to become thoroughly expert in all the processes and to be able to work at a good speed. The actual training is shorter, but since judgement

by the eye must play such a large part in the successful shaping of a sole it is easy to imagine that the skill of the best worker who, with swift, unerring strokes of the knife, cuts out the size required and the curves which will give most comfort to the foot, is not to be acquired quickly. Twelve months is the minimum time in which a boy can become skilled in cutting out blocks, the most elementary part of the work, since blunders on the part of the block cutter may be partially remedied by the man who shapes the sole. In a factory, or in the mines, a boy could earn good wages after a far shorter training than would be needed in the clogging shop. A Lincolnshire clog-block cutter, who had employed four or five men during the War but had lost touch with them and in 1922 was helped only by his son and brother, had no hope of being able to find skilled men if a revival of the industry should make it possible to employ a greater number again. He thought, however, that in such a rural district he might find boys who would be willing to learn the craft.

The work is paid by piece-rates, with variations according to skill. In the south-western counties it was said that the pre-war earnings of a clogger did not constitute a living wage, but it has always been a notable feature of the clogging industry that it is comparatively easy for men to set up in business for themselves. Gangs of independent craftsmen often worked in co-operation, travelling to any place where suitable timber could be obtained, working in the woods throughout the summer and, late in the year, having sold many of the blocks and paid the owner of the wood for his timber, returning to their homes, taking with them the remainder of the blocks to be finished during the winter. These men seem to have earned a comfortable livelihood and the owners of birch and alder woods welcomed them.

In the clog industry there are three main sections :

1. Clog-block cutting.
2. Clog-sole making.
3. The work of the town clog-maker, often a cobbler, who makes and fastens on the uppers and may also put the finishing touches to machine-made soles.

In addition to the hand cloggers there is also the clog factory.

There are some instances of self-contained firms, which carry out the whole process of manufacture : two of these are found in a Shropshire town, one in Norwich, and several

in the north of England. Some firms have boot shops, and employ men to make and fasten on the uppers, or they employ cloggers in addition to the men making and fixing the uppers. There is also the type of man who owns a few acres of land and does a little timber dealing and carting in addition to clog-block cutting. In Devon two small firms buy underwood, selling some as firewood and making brush-backs and clog-blocks from the rest. This is an economical form of organization, for the wood can be sorted according to its suitability for one or other of these purposes and none is wasted. A single clog-block cutter is employed and other workers of varied capacities.

The combination of clog-making with some other wood industry is more economical than carrying it on by itself, for in making clogs a great deal of wood is cut to waste. Knotty pieces cannot be made into clog soles and if knots are numerous the wood cannot be cut up to the best advantage. Even when the blocks are cut in the woods a great deal of waste material is carted, for a large amount is shaved off the rough blocks during the finishing process. In fact, it has been estimated that three-quarters of the block is cut to waste, and the clogger's yard becomes littered with rapidly growing piles of chips.

The gangs of itinerant block-cutters who go to work in the woods may be independent men or employees of a merchant. A Shropshire timber merchant and clog-block dealer employed from twenty to thirty cutters before the War and they travelled to Salisbury, Oxford, Thetford, and Southampton amongst other places. One large firm used to send gangs of block-cutters to Ireland, but this had ceased even before the War. The same firm often employs, in addition to these block-cutters, cloggers or sole-makers.

The ease with which a journeyman may become a master is noteworthy in the clog industry. Capital is needed only for the few tools and for labour and board. Many workmen set up independently in business during the War, but sometimes the reverse process has occurred.

The largest type of clog-making firm buys a supply of timber enough for several years and erects a factory in the woods, with army huts for the men and their families. In the one case, on an estate in Durham, thirty men are employed on the machines and, in addition, half a dozen hand-cloggers. This firm has often erected small factories for a year or two in the woods of Ireland.

Associations and Unions

In the small timber-using industries there is little organization either of masters or men. The employees in big turnery mills often belong to the Workers' Union or to other unions. The Industrial Council for Wood-working Industries unsuccessfully attempted the regulation of wages and the rates are now settled by individual firms.

Clog-makers are an exception to the other small-wood industries in this respect for the Masters were already an organized body of craftsmen as early as the fifteenth century, as is shown by the petition of the Clog and Patten Makers addressed to the king in 1465.¹ They are now organized in the Amalgamated Society of Master Cloggers, but do not include in their ranks the master block-cutters, who are, for the most part, the itinerant woodland craftsmen. Attempts were made before the War to organize the latter in order to prevent the undercutting of prices and the enticement of employees from one master to another by the offer of higher wages. These attempts, which originated with the Master Cloggers, fell through owing to the spasmodic and scattered nature of the industry.

The clogging or sole-making branch of the industry, which is carried on chiefly in the more urban areas where the workers are less scattered, is better organized, there being also a men's trade union, which fixes wage-rates for Yorkshire and Lancashire. It is to the advantage of an organized trade as a whole that the industry whence its materials are derived should also be organized, so that no one firm should reap advantage by getting its materials at 'cut' prices. But when firms and craftsmen are scattered over the country there are no adequate means of proving delinquencies or enforcing regulations. The master clog-block cutters seldom carry on that industry alone, and the men also often require some other means of livelihood, particularly in the winter months. This further increases the difficulties of organization.

¹ See Ald. Broughton, *A short Sketch of the Clog and Patten Trade*. (Amalgamated Society of Master Cloggers, 1890).

CHAPTER IV

MARKETS

AMONGST the timber-using industries there are to be found examples of all the ordinary methods of marketing products. Turners' ware used to be sold at the country fairs and at Kingscliffe Fair. Gipsies also used to buy a great deal of the turned ware from Kingscliffe, paying periodical visits to lay in a stock, which they sold as they journeyed about the country. Gipsies now find a readier sale for enamelled and other metal goods, and only one old gipsy woman still comes regularly to Kingscliffe to lay in a stock of wooden spoons.

TYPES OF MARKET

Contemporary marketing is carried on by individual businesses in one or more of the following ways :

1. Retail sale by the maker from a small shop or market stall ; or, in the case of work done chiefly to the orders of a circle of customers of old standing, the shop may not be necessary.
2. Supply of products to shops in the neighbourhood, which retail them.
3. Supply to factories in the neighbourhood.
4. Supply to a general wholesale market, both to dealers and factories.

1. *Direct Retailing*

This method is followed by the small firms which make things for the general use of the people in the district, such as many of the small-scale turneries supplying household needs ; it was also followed by the wheelwrights, and by the coopers who used to make beer barrels for farmers who brewed their own beer. The stable coopers are also included in this class, and some of the self-contained clog-makers of the North.

A variant of the market stall is seen in the auctions arranged by saw-mills and other makers of wood ware for

farmers, to dispose of inferior stuff, such as fencing made up of ash saplings which are not straight enough for riving. Much of the oak and ash of poor quality, which must be bought with better material in a big lot, is made up to be disposed of in this way. The things fetch whatever any one will give for them, but they are known to be of inferior quality, and are therefore sold more cheaply than the regular output of the firm.

Cabinet makers or turners in towns, especially in the poorer districts of industrial towns, often put together a few wooden toys, rather roughly made, for local retail sale at Christmas time. In a Suffolk seaside resort fret-sawn wooden figures are sold by the makers to visitors during the summer season.

2. *Supply to Shops*

The second method is followed by some of the coopers, such as the one at Berwick, who sends peggy-tubs to retailers up and down the coast, as far as Dunbar and Newcastle. The co-operative stores and drapery shops sometimes take tubs for plants, but this is not a very satisfactory market, as prices are too 'keen'. Turners often supply peggy-sticks and other domestic goods to co-operative stores and other shops.

The small furniture factory at Market Rasen supplies retailers in towns, chiefly within a thirty-mile radius, such as Lincoln, Gainsborough, and Newark, because the rates for carriage are higher beyond that distance. The mill at Chipping also supplies chairs to dealers in the industrial towns of Lancashire, and the mills in the West Riding of Yorkshire send their chairs to shops in the industrial towns of that county and of Lancashire. During the War there was a strong demand in these towns for this cheap type of furniture.

The making of rustic furniture is conveniently carried on in any suburban district where cord-wood is available, the furniture being heavy and bulky, and therefore expensive to transport. A single-handed maker near Bedford declared that he could get enough work for twelve men if he liked 'to run about after it'. He sends the furniture over a fifty-mile area, executing private orders, and also supplying firms which retail it. There is a good demand and no competition.

3. *Supply to Factories*

The method of supplying factories in the neighbourhood is followed chiefly by turners. Brush-turners in Newark and the district around supply local factories, but there is no organization of the supply, some of these turners sending their stocks to Sheffield, whilst many Nottinghamshire factories get brush-backs from Doncaster. Small turneries at Frome and Bromham (Wilts.), supply the small brush-works at Frome and Corsham and the larger factory at Trowbridge. Some of these brush-works, in their turn, sell the finished brushes only in a local market, the makers hawking them round to farms, dairies, and breweries. The dairies provide a good market for bass-brushes. A turnery at Wortham Ling, near Diss (Suffolk), supplies a one-man brush-works in the same village. The Wymondham turnery makes stocks for the big works in Diss, ten miles away. The brush-back turners in Maidstone, Hawkhurst, and near Chichester supply brush-making firms in Maidstone, but also send the stocks farther afield. Tool-handles are made by small firms in the west of England and the Midlands for the big implement factories of the Midland industrial towns.

A special local market, which has now been extended, is seen in the case of the lawn bowls made at Framlingham, which were originally supplied only to local users. Framlingham bowls have now gained a name of their own, and are sent far and wide.

4. *Wholesale Markets*

Under the fourth method of marketing, the supply of goods to a general wholesale market, there is no apparent reason for the distribution of certain products, and chance connexions seem to have played a large part in determining their destination. Thus, chair-legs from the Sussex Downs are sent to Glasgow, whither also go the brush-backs from many Midland turneries. A Westmorland turnery sends tool-handles to an agricultural implement works in Wellington (Salop), and sieve-rims go to the Midlands from Sussex, although in both cases makers of these things could be found nearer at hand, and some of these makers could also find users of their products nearer to them.

Furniture is generally supplied to more than a local market, if it is other than of the most commonplace type made by a small town firm. The hand-turned and rush-

seated chairs, which are being made in a saw-mill near Leamington, were sold at first to a few private customers, with whom the maker had come into touch through the group of craftsmen to which he formerly belonged. A big order was executed for a school, and then firms which deal in furniture of a simple type for bungalows and country cottages began to make inquiries. An illustrated catalogue was being prepared at the time that this inquiry was made, and the development of the industry for the supply of a wholesale market seemed likely. The Windsor chairs, of lighter build, all of wood, which are hand-turned in the Chipping mill, were sold wholesale.

A toy-making industry of any size must rely on wholesale dealers for the sale of its output, and travellers are really needed to push the sales.

It is not usually practicable to supply bulky and relatively cheap articles to distant markets because of the high freightage costs. Saw-mills which make poultry houses and other farmers' goods find that this factor limits the amount of their output. Four pig-troughs sent from Newark to Chester in 1921 cost a total of £3 10s. for freight. There has, of course, been some reduction in railway rates, but the cost of sending heavy goods of this type is still very high in relation to their value.

The industrial districts of Lancashire and Yorkshire provide the biggest markets for clogs, and thither blocks are sent from Devon, Salop, and Lincolnshire. The block-cutters of both Devon and Lincolnshire have spoken of the possibility of a local market for clogs; they were seen in a shop in Poole, and were said to have been in use there before the War.

CHAPTER V

CONDITIONS AND PROSPECTS

Of the timber-using industries, those which have a definite individual existence and a possible future of their own as rural industries, are clog-making and some forms of turnery and of cooperage;¹ the toy and furniture industries, although at present only existing in a rural form in a few instances, most of them of recent growth, seem capable of further development.

Many different factors must be taken into consideration in any estimate of the prospects of rural industries. The chief of these are :

1. Factory competition.
2. Foreign competition.
3. The use of power-driven machinery.
4. Markets and selling agencies.
5. The advantages and limitations of the special methods of rural production.
6. The question of apprenticeship and the supply of young skilled workers.
7. The advantages, from the worker's point of view, of the rural industry as a means of livelihood.

1. *Factory Competition*

As regards factory competition, factory-made articles of two kinds appear as rivals in the market to the products of rural industries: there is, firstly, the machine-made replica, and secondly, the substitute, that is to say, a different thing to serve the same purpose, also machine-made and generally of some different material—for example, enamelled iron, instead of wooden articles. The cheaper methods of factory production, either of these substitutes or of things identical with those formerly made by hand, have, during the last century, killed several small rural industries. Examples of such industries which have only died out in their rural form within the last twenty years, or which still survive as small industries in a few isolated cases, are the bobbin, tool-handle, and brush-back turneries.

¹ Wheelwrighting is treated in part ii, chapter I, p. 173.

These are things generally needed by factories in large quantities and of uniform size and shape, and are therefore little suited to the methods of rural production, except under the conditions which exist in larger works having machinery and power equipment.

In clog-making, factory competition is felt severely, but it is as yet uncertain whether the machine-made sole can entirely replace the hand-made, which is at present so much more comfortable. The abnormal demand for clogs during the War, when imports ceased and the number of industrial workers increased, stimulated the development of clog factories, until the higher wages of the industrial workers made boots more accessible to them. The wearing of foot-gear with wooden soles is felt by the industrial worker to stamp him as a being of a class inferior to that of the wearers of leather soles, in spite of the fact that for certain purposes clogs are far more effective in protecting the wearer from discomfort and even ill-health. In 1922, a clog-block cutter who visited half a dozen of the industrial towns of Yorkshire, could not obtain a single order for blocks. This was partly due to the competition of the cheaper factory-made clogs, partly to the general trade depression, and partly to the decline in the use of clogs.

In furniture-making, for the cheapest kinds of chairs and stools, mass-production in factories is bound to gain a monopoly of the market, although the rural pole-lathe turners who supply the legs and rungs can still find a demand for them. Producers of this cheap type of furniture say that the only point of importance is to turn out the things at the lowest possible price by the use of machinery and the elimination of hand-work. But people who appreciate and can afford to pay for better workmanship and design continue to buy the type of furniture which can be made by the small rural industry.

In certain industries there was temporary competition from a new source during the years following the War, namely, the sale of government surplus stocks at prices sometimes below the actual cost of production. This often hit a small industry severely. For example, wheelbarrows were sold in East Anglia at 25s. each, whereas the makers could not at that time make any profit at all from a selling price lower than 30s. or 35s.

Factory-made substitutes for the products of rural industries in the shape of different articles to serve the same purpose are many, chiefly metal goods which replace turners'

ware and cooperage. Examples are the galvanized iron stable-buckets which are now more often used than wooden ones. Wooden dairy utensils are largely replaced by enamel ware, and metal cheese moulds have taken the place of wooden ones. The wooden moulds are very heavy and often made without handles; the cheese has to be lifted daily whilst in the press, and the work is chiefly done by girls, so the item of weight is an important one.

In the making of cheap barrels for packing purposes (slack or dry cooperage), the small rural firm cannot hope to compete with factory production. The making of kegs for the Brandon flints is one of the very few surviving instances of dry cooperage as a rural industry. In wet cooperage for stable-buckets and wash-tubs, which need to be well and strongly made, some small rural firms still hold the field, and the repairing work which has to be done on these things helps to keep the hand cooper employed.

2. *Imported Goods*

Foreign competition affects not only the small industry but the factory also. It is severely felt in the bobbin trade, although but slightly as regards built-up bobbins, the English industry being pre-eminent in the elaborate machinery and the engineering skill which are needed. But the making of silk reels seems to be dying out in England owing to the superiority of foreign wood for this purpose and to its relative cheapness. Sycamore, which is the only English wood white enough for silk reels, costs about two and even three times more than the imported variety. In the year when English reels cost 2s. a gross, foreign reels of similar type were to be bought for 1s. 3d. a gross. As regards the quality of the material, the softness of foreign wood is, for this purpose, an advantage, for the inmost layers of silk would on an English reel be flattened by the pressure, whereas the foreign reel will be slightly indented and the silk undamaged. For cotton reels, however, the colour and texture of the wood are less important, and the English reel holds the market. Tool-handles of the cheaper sort are imported in great numbers from the United States of America, and are sold by English firms which manufacture those of better quality in their factories. Broom-handles, formerly made by many rural firms, are also imported.

Clogs came from Germany before the War, a felt-lined

sort for garden wear being considered superior to the English variety. The importation of German egg-cups, too, made severe competition for some of the small turners before the War. These egg-cups were sold at 5s. a gross when the English sort could not be sold by the maker at less than 6s.

Great numbers of wooden toys, as well as others, come from Germany, but they are generally crude and rough, and in any case the large, heavy, wooden models which are successfully produced by a few small English firms would probably be too bulky for their transport to be profitable. The imported toy seems to have little effect on the demand for English toys of really good workmanship and design. An industry which began by making small wooden toys of the cheapest type found that it was impossible to compete with Germany in this line, but as soon as it changed the character of its output, producing big, solid, wooden models, notable for verisimilitude of proportion and design, a good market was found at once. Many saw-mills and turneries, however, which have attempted the manufacture of toys from waste products, have but the crudest idea of what the juvenile public wants.

3. The Use of Power-driven Machinery

This factor has two aspects: on the one hand, the use of power-driven machinery by small firms may enable them to compete more successfully with others; on the other hand, the introduction of very expensive and complicated machinery into an industry may give the large factory new advantages and cut out the small business entirely.

In the clog industry, machinery has, as yet, only been brought into general use in factories. A Shropshire clogger has introduced a power-driven band-saw for shaping the blocks, the finishing processes still being done by hand with the knives. The innovation seemed satisfactory; the blocks can still be cleft by hand and the grain thus followed; the shaping of them by means of the saw saves labour, and the final processes done with the knives gives the more comfortable finish which is one of the chief advantages of the hand-made sole. The fact that the block-cutting is generally done in the woods, and often by itinerant bands of cutters, thus saving the cartage of a great deal of waste material, lessens the prospects for the increased use of this simple kind of machinery for the block-cutting process.

A scheme for supplying the electric power to villages, similar to that now being tried in Herefordshire, should provide opportunity for the instalment of machinery in small rural industries. The wheelwright's business is one most capable of development in this way, and examples have been found in which profits made by the war-time felling of timber have been advantageously invested in machinery which has facilitated the extension of the industry.

The other aspect of this factor is seen in the bobbin industry, where the introduction of the automatic lathe and of other complicated machinery rendered it impossible for the small mills to compete with the larger ones, which alone could afford to instal it.

4. *Markets and Selling Agencies*

Loss of touch with a suitable market may cause the decline of a rural industry, especially where a change of conditions makes it necessary to find a new circle of customers. This is seen in the case of certain types of furniture. Yet the furniture industries of Broadway and Leamington show that there is a demand for the good hand-made furniture when the right market can be found.

5. *Advantages and Limitations of the Special Methods of Rural Production*

If the small rural industry, with its hand processes, attempts to compete directly with the factory in the same quality of goods at the same prices, failure is sure to result. It is important that the things made should be chosen and designed with the special object of turning to the best advantage all the peculiar characteristics of the small rural firm. These include :

1. Access to cheap raw material from local sources.
2. Hand-work.
3. Individuality.
4. The versatility of the workers.
5. The local character of the products.

In a rural industry the craftsman's skill should be used to the best advantage, but, at the same time, elaborate decorative work should not be undertaken, as a general rule, because the cost of this type of hand-work is so great in relation to the price which will be paid for it.

In a small industry the workers have scope for the develop-

ment of their individuality, and this is particularly of value in providing a variety of original design. Medieval churches owe the charm of the carving which often adorns all faces, ends, and corners of stone, to the untrammelled fancy of the carver. The ability of the craftsman to embody in materials the figures created by his own imagination is partly a native talent and partly a matter of education. That, there is a great deal of inherent talent of this kind, ready to be developed by education in the right direction, is shown, for example, in the carving done by the Kingscliffe turner, and in the very good and original toys made in one workshop—the model caravans, with their inside fittings, their steps, and the gay scroll decorations painted outside. Success in designing toys of this type depends not on making a slavish model of the original, but on discriminating between those details which can be reproduced and those which are better eliminated, and on the imagination brought to bear in the work of adding these details to the model.

The versatility of the workers, who, in the typical rural industry are skilled in all the processes which go to the production of one thing, and often in the making of several different things, should facilitate (*a*) the utilization of waste to the best advantage, and (*b*) the adaptation of the industry, by changing the type of things produced, to meet the changes of the market. But other factors such as the lack of machinery, and lack of knowledge of markets, often prevent the realization of this possibility. In the utilization of waste, small firms are often behind the larger ones, although the worker in a small industry should be able more easily to exercise his ingenuity in the making up of waste scraps of wood into saleable things. Yet these odd scraps are often burnt by the small turner because he has not troubled to think out a method of using them or the possibility of a market for what he might make from them.

Again, a rural industry is often found to be less adaptable than a factory, owing to the conservatism of the workers, although it should be able to change its output quickly without serious dislocation, being unhampered by elaborate machinery which cannot be converted to a new purpose, and relying on the all-round skill and knowledge of its craftsmen.

The local character of the products of a rural industry, that is to say, features peculiar to the things produced in one particular district, and often bearing some direct relation to local conditions, such as the nature of the timber

which is available, have often considerable value in the market, both from a utilitarian and from an aesthetic point of view.

All special characteristics of the rural industry must be utilized, if possible, and the aim should be to develop to the utmost those traits in which the hand-made articles excel the factory product. Thus, for clogs, the use of the most suitable wood and the most careful shaping of the sole to ensure the greatest comfort for the foot, should be the points of importance, for it is in these respects that the hand-made clog is superior to that which comes from the factory. In furniture-making the rural firm should consider the kind of competition which it is likely to encounter from the factory, and avoid it as far as possible by development in other directions. The best woods are often too expensive for use alone in factory-made furniture, so for the more decorative kind of work lighter and less expensive wood is used as a foundation, covered with veneers, stained or dyed, unless they have the required colouring in their natural state, and french polished in such a way as to bring out the beauty of the grain. This kind of work, with the necessity for machinery for the cutting of the veneers, is not suitable for the small rural firm which can afford machinery only of the simplest sort. The public will not pay for the extra toil and time given to making things by hand which are as like machine-made things as the craftsman can possibly make them. All the outstanding features of the rural industry which have been enumerated above should be brought into play to make the products as different as possible from those of the factory. The scale of the industry which can be run in any locality, and the appropriate labour-saving devices, such as power-driven saws, which can be used without depriving the work of the characteristics it gains under the craftsman's hand, must all be related very carefully to the type of work the men can do and to the scope of the market. It must always be borne in mind that small workshop industries depend on the all-round capacity of the craftsman and on the designer's ability to produce an effect by simple means.

6. *Apprenticeship*

In many of the wood-using industries the shortage of apprentices and learners, and even of skilled workmen of the younger generation, is a serious obstacle to development. In an industry which exists only on a small scale, every individual worker and individual firm is of importance.

The reluctance of one or two masters to go to the trouble of training boys in their workshops may have quite a serious effect on the supply of skilled labour in the industry as a whole. The type of man who says that he 'cannot be bothered with a clumsy lad' is unfortunately common in the wood industries. The master in a small industry needs to be a craftsman himself, and if, when he retires, there is no one in the workshop who is capable of carrying on the organization, the probability is that the business will become extinct.

There is also the type who feels towards the younger generation an antagonism rooted in a profound contempt for modern education. The prejudices of the older generation of craftsmen against modern methods of education may have a certain amount of justification. An old man described how a schoolmaster who was to give the instruction brought his whole stock of tools to the builder of his small workshop with the request, 'Will you sharpen these for me? I never can get a good edge on them!' This admission of incompetence inspired in the workman a contempt for all modern teachers of technical subjects.

Employers in wood-working industries complain of the expense of employing unskilled lads, one of the items in which is the Employers' Liability Insurance. Boys who had received some preliminary training in the use of tools would stand more chance of a welcome; they could make themselves more useful, profit more by the further instruction they would receive, and be less likely to injure themselves with the tools through inexperience. *In Bristol and in Leicester promising schemes are being developed for joint responsibility between the employers and the technical and art schools with regard to training. There are country towns in which such schemes might be developed, but the difficulties of getting the technical and art education to percolate to the villages are very great. They do not concern one industry alone, but in view of the popularity of woodwork as a subject for evening classes it seems that more attention might be paid to modern tools and small machines, and more might be done to arrange visits to works, travelling classes, and demonstrations, and to provide facilities for the loan of books and diagrams.

There are many instances of small firms which will come to an end with the death or retirement of the present master. This is the case with the Kingscliffe turnery industry, which had been in a declining condition for many years previous

to the War owing to the very poor earnings of the turners. No lads would apprentice themselves to such a poorly paid craft, and as the old men gradually ceased to work, there were none to take their places. In the sixties there were forty or fifty turners at work; an old turner can well remember when ten workshops were always busy; but he alone now carries on the industry as a livelihood, one or two of the village tradesmen who learnt turnery in their youth still doing a little now and then.

There seems to be a need for a new system of apprenticeship in many of these wood industries. The old seven years term, with no possibility of good earnings during that time, offers no attractions to the boy who, if he entered a factory, might in a few years be earning twice or three times as much as he would, after the same period, be receiving in the village workshop. The old craftsmen, however great their skill, may be poor teachers, their rough and ready methods of imparting instruction may be distasteful to boys who have experienced better methods of teaching at school, and a learner might attain more quickly to efficiency under instruction on newer lines. The whole question of technical training in schools is involved, together with certain other important problems, such as that of the usual drabness and stagnation of village life, which makes all the more intelligent boys and girls only too keen to leave it. These problems have a bearing not only on the timber-using group of industries, but on the whole range of rural industries.

The amount which workers in rural industries can earn also, of course, affects the situation. Until it became comparatively easy for the village lad to exchange a rural for an industrial life, he was likely to compare the earnings of workers in rural industries with those of farm labourers; but now he is more likely to compare them with those of the workers in towns, to the detriment of the rural rates of wages.

7. The Advantages of Rural Industries to the Worker

Although the earnings in rural industries are as a rule bound to be lower than those of factory workers, this is not the whole story. To begin with, the cost of living is generally less in the country than in a town, although, on the other hand, housing conditions may be poorer. There is also the advantage that it is comparatively easy for a worker in a rural industry to become a master man and thus gain independence, to found a business of his own, and even,

perhaps, to develop it considerably. At Brockenhurst, in the New Forest, a one-man turnery has grown into a business employing fifty men. Many rural industries, such as clogging, can be started with very small capital, and gradually built up. The master has a good opportunity of apprenticing his son in a business which the boy may later inherit. In this connexion, however, there have sometimes been disadvantages where an industry has fallen on evil days, and a son has been apprenticed to his father's trade, not through any aptitude for it, but owing to the fact that his father could not afford to apprentice him elsewhere.

Although certain industries seem destined to die out, at least in their rural form, there seems to be scope for the further development of those existing, and even for the starting of new enterprises. Wheelwrighting is, in many instances, capable of extension. The prospects of cooperage are doubtful; probably the number of rural firms will tend to decrease gradually as factories gain more and more control over the market. There may be openings in some forms of turnery, and in the making of toys and of furniture. Several enterprises of recent growth which are now in a prosperous condition seem to show that there is room for development here.

In the clogging industry the position is somewhat uncertain, owing to the great strides made during the War in the use of machinery, and the possibility of further improvements in it which may lessen the superiority of the hand-made sole.

There seems to be a growing demand for wooden crates and barrels for the transport of the produce from the market gardens and fisheries of South Cornwall. The question of getting cheap empties is an important one for fishermen. It has been said on good authority that a fish buyer writes down half his bill for empties as a dead loss, because so many of them are stolen in London or sent back in a worthless condition. They have to be of solid make to hold the fish packed in ice. The fishermen are affected by the expense to which the local fish buyers are put by these losses on empties, and would, therefore, be benefited if cheaper packages were obtainable. The oyster beds started at Helford and other oyster beds in this district are also likely to create a market for locally made empties.

In connexion with basket-making the increased use of wooden packages has also been mentioned.¹ Some of the

¹ See Vol. II. *Osier Growing and Basketry Industries*, p. 69.

new empties which are being used for fruit come from France, and are made of sawn wood bound with hazel bands like barrel hoops. Thinner and lighter cases are made of cleft material. There might be an opening for the manufacture of these empties in districts where quantities of fruit or fish are sent to distant markets, but the work seems to be more suitable for a factory than for a rural industry. The process of cleaving wood by hand, although it would provide a stronger case, would almost certainly be too expensive for the purpose, since the 'non-returnable' type of package is so much in demand, and in this the chief point to be aimed at is cheapness in combination with the least possible weight and sufficient strength. The cheaper kinds of foreign wood are more likely to be suitable for this purpose than any English timber, although the poorer qualities of English timber and waste pieces from saw-mills are frequently used for making packing-cases of many descriptions. The chip-basket factories, with their machinery for cutting these strips or 'veneers' of wood, might take up the manufacture of other packages, and other similar factories may come into being, but it is hardly likely that this demand for empties will have much effect upon any small firms using English wood and making it up by hand processes.

UNDERWOOD INDUSTRIES

CHAPTER VI

RAW MATERIALS IN THE UNDERWOOD INDUSTRIES

Oak

BESIDES its more important uses as timber, oak is used for several different purposes as underwood. The most extensive use of small oak is in the making of the split oak basket, known generally as the oak-spelk basket or whisket. Except for the rim or bool, the basket is all made of oak split into thin strips and woven. The wood needed for this purpose has to be of good quality: it must be straight and without knots, or it could not be split into such thin strips as are necessary for the work, but it does not have to be large. The three counties where these baskets are found, Cumberland, Shropshire, and Derbyshire, and one where they were made some years ago, Devonshire, grow plenty of coppice oak. In Shropshire the poles bought for this purpose are over thirty years' growth, and about four to six inches thick; they have to be fairly straight. Oak 'heatherings', or small rods up to about one and a half inches thick, are used for the rims in this district, but in the other two districts different materials are preferred for these.

All makers of oak baskets are agreed that the oak must be straight and 'kind' to be of any use to them. It grows 'kinder' on clay than on poorer soil, and makers prefer oak that is not too young or grown too quickly. Quick growth often means a coarse grain, and a fine grain is essential when the wood is to be split very thin.

Oak must always have been stripped of its bark for use for oak baskets. When the bark is used for tanneries, this works in well for both industries, but of recent years the stripping has become little more than an added expense to the basket-maker, instead of being what it might be, a source of raw material for another industry. The stripped oak cannot be used for hoops, as the wood for these must have

bark on it. In Shropshire, oak for whisks is bought from dealers, but in Westmorland and Derbyshire it is often felled and hauled by the basket-maker. If not actually felled and hauled by him, it is bought from a local wood-dealer who does this work.

Besides being made up into swills and other oak baskets, coppice oak has several other uses. It is burnt along with many other kinds of wood for charcoal—the best kind of charcoal for smelting copper is that from oak—and occasionally in Shropshire crate-rods and heads are cut from it. In East Anglia it is used in a haphazard manner, together with ash and hazel, for hurdles. The Surrey walking-stick factories prefer oak for any purpose where strength is particularly required.

Ash

Ash is one of the most useful of the underwoods; it is valuable for its peculiar quality of suppleness combined with strength, which makes it in general demand wherever riving or bending has to be done. In the hurdle-making districts ash is nearly always used, particularly in Gloucestershire and Warwickshire, but also in many other places. In Lincolnshire, where only gate-hurdles (trays) are made, these are sawn, and oak and heavier woods are used, but for the rived fencing which is made there, ash is the wood chosen. Oak, although strong and hard, has not the pliability of riven ash, and is liable to break under a strain beneath which ash would only give slightly.

It is used for the heads and bows of rakes in Cumberland, and for the teeth of rakes in both Kent and the East Midlands and Warwickshire. The booms of oak-splank baskets can be made from it, though they are also made of other woods. Another use for riven ash is for the laps of besoms. These have to be split off the pole in long thin strips, not more than half an inch wide, and the capacity of ash for retaining strength in small compass makes it very suitable for this purpose. When no more laps can be rived off the pole, the core remains for a thatch-pin. The ash must be felled in winter, as laps cut from wood with sap in it will snap. Near the Forest of Dean ash is used not only for the heads and teeth of rakes, but for the shaft as well, and, both in Herefordshire and Kent hop-poles are cut from ash when chestnut cannot be got.

One of the most important uses for ash is in the making of barrel-hoops. Opinions in various districts

differ as to its exact value for this purpose. In Warwickshire, the best wood is picked out for the hoop-maker, and ash is more prized for hoops than any other. The hoop-makers say that it is supple and easy to cut, and has so little sap that it can be used all the year round; the other woods can only be used up to June, for after that the sap runs and the bark will come off, which, for hoops, is a disadvantage.

The opinion in Sussex about the merits of ash for hoops differs from this. Though nearly every one admits that ash makes 'a lovely hoop', they add that it has to be made up during the winter, for it is one of the woods that will not keep. It is apt to get 'fly' (the ash-bark beetle) in it, unless kept in running water, or covered with moist earth. 'Fly' does not greatly injure the quality of the wood, but spoils the appearance by leaving a quantity of small holes all over the surface. Rake-makers feel this to be a disadvantage in ash, and the usual remedies, either soaking in water or burying in earth, spoil the colour. The best method of preserving is to steam or boil the wood for two or three minutes as soon as it has been cut, but the expense of this makes it impossible for most businesses.

In Surrey, ash is used extensively in Chiddingfold for the walking-stick industry. This is not merely the coppice-wood of the neighbourhood, a large quantity being specially planted and grown for the purpose. The reason is that the only kind of curve or 'crook' for the handle which the maker can produce from a straight stick is that which is curved by steam. If a straight handle at right angles is desired, or even a knob, unless it is to be added to the stick in another piece or in other material, the stick must be grown in such a manner that the root will form either the knob or the cross-piece. Thus not only is coppice useless for the purpose, as the root is dug up and the plant destroyed, but for a cross-head ash stick the shoot must be grown in a peculiar way from the start. The growing of ash plants is considered in Surrey the most important part of the work of the stick-maker.

For ash which is specially grown for walking-sticks, the ground needs as much preparation as for the basket willow, and the cost of planting seems to be even greater. The ground has to be dug extremely thoroughly; trenching it costs 5s. a rod, which comes to £40 an acre. The plants cost £1 a thousand for the best quality, and about forty thousand are needed for an acre. Large quantities of the

best manure at £1 a ton have to be used. Using the best material throughout and sparing no pains in the cultivation the cost of planting one acre is given as £250. A slightly more moderate estimate was that the £250 would prepare, plant, and keep the ground clean for the first two years, after which, according to some growers, it need not be weeded any longer.

Plants are either left to grow up straight or are planted in such a manner as to grow with the root at right angles to the plant, and this will make a 'cross-head' handle to the stick. The art of causing the plant to grow in this manner is regarded as a great secret. After seven to ten or eleven years the plant is ready to be dug up and made into a stick.

Ten years is a long time for which to sink so much capital as £250 an acre, and it is by no means secure during the time, for a frost in May can ruin the whole plantation. It is possible, by building smudge fires all round and counter-acting the effects of frost with warm smoke, to save the plants, but they need constant watching and care. Again, ash is liable to 'fly' of various sorts, and much of the market value of the plants is destroyed if they are much attacked by pests.

Chestnut

Chestnut is one of the most valuable of coppice-woods, but because it does not grow everywhere, it is not used so universally as many others. Its peculiar property is that of remaining sound for a long time when under the earth, and as a consequence it is in particular demand for stakes of all kinds. Hop-poles are always made of it when it can be got, and also hop-posts, both in Kent and in Herefordshire. It is fortunate that the district that needs most hop-poles and posts should be the one where the soil suits chestnut, which needs a sandy loam; the warm climate of Kent is also good for its growth.

The split fencing so largely made in Kent, Sussex, and Surrey is of chestnut, as are also spiles for fences and wattles for hurdles; it is used for other sorts of fencing as well as sheep hurdles in Herefordshire and Worcestershire. It is not often used for hoops, though it would be excellent for these, its value for fencing and poles making it too expensive for any other purpose. All growers of under-wood in Sussex plant as much chestnut as possible, on account of the market price that it commands.

Hazel

Not half so valuable as chestnut, but far more universal, is hazel. It grows in every wooded district, and is used for the many minor purposes where a small cheap wood is required. Sometimes it is hardly differentiated in name, but is known vaguely, as in Norfolk, as 'nuttery', just as willow and one or two other sorts of small woods are often lumped together as 'sallow'.

The chief use for hazel is where small pliable rods are needed. It is the sort of wood that takes the place of osiers when something slightly tougher and more durable is wanted, as for the crate-rods and heads, and some sorts of baskets. Bools for oak-spelk baskets are also made of it. The gipsies often use hazel for their baskets, and it is the material for wattle hurdles in East Anglia and the southern counties. Sometimes it is split and woven into wattles and baskets, and sometimes used whole. Hazel is also used whole in large bundles for ship-fenders, and single sticks are split for broach-wood in Norfolk. Chesterfield besom-makers use hazel rods for the handles of their besoms, and often get them from the Furness district. In the south-western counties, hazel sticks are sometimes more difficult to get than birch, because in this district it is often grown too long to be of much use, particularly for hurdles where the smaller sizes of rod are wanted for the wattling.

The most extensive use for hazel is provided by hoops. In Cumberland they are made from any hard wood except elder, but ash and hazel are the most commonly used. In East Anglia the making of hoops has entirely died out, because the 'nuttery' of which they would be made is not of such a good quality as the hazel of Sussex, and thus the Sussex hoops have persisted, while the Norfolk hoops have not survived.

In the south-eastern counties, woods that cannot be worked easily if kept long are sometimes called 'coloured work'; such are chestnut, willow, and any oak or birch that may be used, as well as ash. These are made up at once into hoops during the winter months. Hazel, which keeps for even as much as two years, is left to be made up during the summer.

Hazel is seldom bought from dealers, but is usually cut and brought in by the man who wants it, or the sticks are obtained from the woodman.

Willow

Apart from its important uses for cricket bats and baskets, willow is used for all those purposes where a cheap wood without much quality is needed. Where it is thought that 'anything will do', willow is the stand-by; but willow is a generic term, and is often hardly differentiated, from several other sorts of wood known vaguely as 'sallow' or 'sally'.¹ Although this dialect word means primarily 'willow', in some districts it is used to describe other woods. In Suffolk, for example, 'sallow' was used for any 'soft wood' (meaning the softer varieties of hard wood), birch, alder, hazel, or willow of any variety.

Many things are made of willow when ash, chestnut, or hazel cannot be obtained. In this way split hurdles are made of it, and it is frequently in use for wattle hurdles, where the only alternative is hazel, the willow for this purpose being just as good. In the Earith district of the Fens, where ash cannot be obtained for hurdles, rods are cut from the 'doddle-heads' or pollard willows. Four-year osiers were used for crate-rods in Shropshire. Willow is used for the teeth of rakes in Cumberland, and in Kent for a cheap variety of rake it is used throughout. In Yorkshire it is thought to be too woolly for rake teeth. It is a recognized material in many places for a cheap variety of hoop, without the quality of the hazel hoop. Willow, again, is one of the many sorts of wood cast into the general heap and burned for charcoal. If the willow and alder can be kept separate from the rest, they make a charcoal suitable to be used in the manufacture of gunpowder for blasting and heavy ordnance work.

Birch

The most important use for birch in the underwood industries is in the making of besoms. The kind of besom used for sweeping up lawns and paths is always made of bunches of birch twigs, but the name 'besom' includes heather and ling brooms as well, and is sometimes used to distinguish them from the kind made of birch. On the other hand, the name 'birch-broom' is often applied in the South to brooms made either of birch or of heather.

Another use for bundles of birch twigs occurs in the manufacture of steel plates. 'Red-hot steel plates develop

¹ Old English *Sealk*, Latin *Salix*.

a kind of flake or shale through oxidation when they first come in contact with the air; the reducing action caused by the burning of birch twigs strewn lightly on them removes the flake. Other twigs can be used, but birch is preferred.

Birch is not considered good enough for hoops, and the only other underwood purpose to which it is ever put is that of making teeth for rakes, as in Cumberland. It is doubtless often used among the undifferentiated woods for many minor purposes.

The birch is usually got from woodmen, as in the New Forest, or from the woods themselves by the besom-maker, as in Yorkshire and the Sherwood Forest district.

Heather

The only purpose for which heather is used is in the making of besoms. The raw material is cut from the moors near Pickering, in Yorkshire, from those above Stony Ridge, near Sheffield, those near Mansfield, and the Wolsingham Moors to the west of Durham. In many other places where there is heather, such as at Hevingham, near Norwich, in the neighbourhood of Hindhead, and on the commons of North and West Hampshire, where there is a sufficient extent of heather, the besom-making industry from heather as well as from birch is to be found.

A besom-maker usually goes with his horse and cart and cuts the heather under the direction of the keepers, to whom it is an advantage to have the heather kept down by this means, since if it were not cut it would have to be burned, a more laborious and less satisfactory method. In Devonshire and Somerset, where no besoms are made, the 'swaling fires', lit about Easter time to burn the heather, light up the skies at night and show clouds of smoke by day. In Hampshire, too, the heather is burned, so that sometimes the besomers of Verwood and Redlynch find it difficult to get. The heather in Derbyshire is usually cut before Lady Day, in order that the young birds should not be disturbed after that date. As there is little deterioration in heather when stacked, if it is cut in dry weather, this is no disadvantage to the besom-maker. On Wolsingham Moor, however, where the right to cut heather over two hundred to three hundred acres is rented, the heather is cut in summer.

Ling makes a softer besom than heather, suitable for use in corn-mills. It is more difficult to get, and is kept for special customers.

Other Varieties

Besides these woods, various other sorts are used in under-wood trades. Thorn and maple are made into walking-sticks in Surrey, and maple is used for hurdles in the East Midlands. Blackthorn is unsuitable for hurdles, as it cannot be rived. Alder is often burnt for charcoal, and holly is made into whip-stocks and walking-sticks.

The shafts of rakes are sometimes made of Scotch fir in Yorkshire, and spruce and larch have been tried for hurdles in Gloucestershire, whilst larch is also employed for hop-poles and hop-posts in Hereford. Coniferous wood is seldom liked for underwood industries: its qualities better serve purposes more connected with the use of timber.

For certain purposes, many kinds of wood are in use which are not differentiated. This is particularly true in the burning of charcoal. When the trees have been felled in the Lake District, they are laid in swathes of different qualities. Oak for swill-makers, hazel and ash for bools, and all the rods suitable for the many purposes of the neighbourhood, besoms, ship-fenders, hoops, crates, and ordinary farm staking and fencing, are laid aside. All the wood of any variety that is not good enough for anything else is then piled roughly in hollow circles and left for the charcoal-burning. In Shropshire, too, woods of various kinds are burned indiscriminately for charcoal, and in Sussex all the waste wood from a large estate near Midhurst is used for the same purpose.

Many woodland-craftsmen complain either of the small supply or the poor quality of coppice-wood and underwoods which are available. Sometimes, when the complaint is of poor quality, conditions could be improved by taking greater care of the coppice and by cutting at the best times; but in many parts of the country coppices have been so long neglected that little improvement could now be obtained. Neglect has been due to spasmodic markets and to the possibility of obtaining cheap, often imported, substitutes for coppice-wood or its products. But it has also been due to some extent to lack of interest on the part of owners. Under present conditions many coppices could be improved, with economical results, and in some parts of the country there are prospects of satisfactory returns from further planting.

Imported Woods

Foreign woods are not often used in underwood trades, but where used they cannot easily be replaced. In Cumberland and the North, rake handles are usually made of pitch pine, and this is also the custom in Yorkshire. In both these districts a stronger rake is required for the rough ground on the hills than is used in the South. In Yorkshire, the teeth and head of a rake are sometimes made of pitch pine, as well as the shaft. The sides of ladders are of Scandinavian fir, although the rungs are often made of English underwood.

Charcoal, though it provides a demand for all wood not otherwise needed, sometimes is required to be composed of special wood. For certain purposes dog-wood from France and Germany is the only material for charcoal. The basis of all black powder is charcoal, and for the finer kinds, such as military and sporting powders, it has to be of one wood, which must be dog-wood. A little of this can be found in the English hedges, but not enough to supply the market. One of the chief difficulties in the getting of good English charcoal is that different woods are not kept separate in the burning, and the quality of the charcoal deteriorates. Where a high quality is demanded, a gunpowder factory must burn its own charcoal.

Methods of obtaining Materials

The conditions under which materials are obtained vary from district to district. The simplest form of procedure is among the besom-makers, who, being on friendly terms with the farmers and landowners of a neighbourhood, supply them with all the besoms they require in return for the right to cut heather on the moors and birch twigs from the felled timber in the woods. The next stage is where sticks are bought from a woodman, the wood being not more than a few miles away. Makers of nearly all underwood articles must be near a wood, and this is well illustrated by the case of the hoop-makers, who are largely concentrated in the south-eastern counties, although their chief market is in the Midlands. Occasionally, underwood is sent long distances to be made up, and crate rods are thus sent from Sussex or Hampshire to the Potteries. The so-called London hoops which are sent to the Potteries come from the Basingstoke district and from Sussex, but they are sent away uncoiled, and are finished in London.

Most generally, however, underwood is bought by the acre standing. This gives the right to cut down and take away all the wood on the acre except the 'standard trees'. It is only when a hurdle-maker or other small craftsman is producing on a very small scale that he buys poles from a big timber-yard. In an industry where three men and a boy worked throughout the year on wood-cutting and hurdle-making, about ten acres yearly was the average amount used, but of course this amount varies considerably with the age and quality of the poles, and the yield of the coppice. Auctions of wood take place in the autumn all over Sussex and Kent and other underwood districts. In Gloucestershire, wood sold locally by auctions is usually sold by 'drifts'. A drift contains a square rod.

Ordinary coppice oak is often bought by weight. The oak required by swill-makers is rather better quality than the ordinary coppice, and is of comparatively high price, apart from railway carriage. If the bark has been stripped from it, and all the swill-makers prefer this to be done, the price is higher as a consequence. The men have to be paid for stripping the bark, and there is a greater bulk of wood to the ton where the bark has been stripped; both these reasons account for the higher price required. Bools for swills are often bought ready cut by the hundred. One swill-maker considered that in a year one workman used six tons of wood, making on an average two and a half dozen twenty-two-inch swills a week. In Nottinghamshire, small oak timber is used for oak skip baskets, of fairly good quality, though not necessarily of the best.

The prices of heather differ widely from district to district. In Nottinghamshire and Derbyshire on some estates a nominal sum is paid for the right to cut, on others a tip to the keeper is in vogue, but on a few there is no money transaction. In Durham, on the other hand, the price paid for the right to cut heather is very high—£20 per annum for a large moor, two hundred to three hundred acres in extent.

It is difficult to estimate the cost of heather; one man considered that carting it three miles cost him 8s. to 10s. a load of forty large bundles, but when the price of a carter with his horse and cart is usually reckoned in the same neighbourhood to be about £1 a day, this would seem to be underestimated, unless there is some special arrangement. The actual carting probably took only half a day.

The time taken to cut and fetch heather and the quantity

in a load differs in the various districts. At Mansfield it was said to take three days to cut and bring in a load. Six armfuls of heather was called a bundle, and there were forty bundles in a load; one bundle made a dozen besoms, and one old man and his son used five bundles in a day. Five dozen besoms were made in a day, and forty dozen made from a load of heather. At Chesterfield, one load of heather took only one day to cut and fetch. Here there were one hundred and sixty bundles in a load, but each bundle made only seven besoms at the outside, and sometimes only five or six. Eighty dozen besoms were made from this sized load.

Shafts for besoms cost 4s. or 5s. a hundred in Nottinghamshire, in 1922, where before the War they cost 1s. 6d. In some districts, especially near Chesterfield, where there are several besom-makers and few trees, shafts may have to be sent from Cumberland, and the price was doubled by railway carriage, the shafts costing 8s. a hundred instead of 4s. In Cumberland itself the rods for bools, as well as the stakes for besoms, were 4s. a hundred. In Durham, spruce or larch for the shafts is bought by the load, for which the price was £1 in 1922.

The laps of the besom are sometimes made of cane. This cost 10s. a cwt. in 1921, and freight on it another 5s. a cwt. In Durham, trees of the size of perhaps six inches in diameter are bought from a neighbouring estate at 10s. to £1 each. When they come from a saw-mill they are 3s. to 5s. per cubic foot. They are split with wedges into slabs, or rough planks, and from these the laps are cut by hand with a knife.

A man who does not own a horse and cart has another expense. To send besoms to the station ready to be shipped away may cost 2s. 6d. a load; before the War, in some districts, the railway collected them free of charge.

The incidental expenses connected with hurdles are often very high. The cost of carting is a big item; one hurdle-maker, who had no horse of his own, said that underwood three miles away had cost him in 1923, £20 an acre by the time it was cut, trimmed, and carted to his yard. Some of the supplementary expenses for hurdles are also high. Nails were still 50s. a cwt., and shackles, of which there are a pair on each hurdle, 16s. or 17s. a hundred in 1923. Railway freights are very heavy, and in order to lower the expense wood is usually sent dry.

Wood that is used for stakes will often, but not always,

do for rakes, therefore the material has to be selected. This always makes the wood for rakes dearer than it would otherwise be. Ordinary stakes in Suffolk in 1923 would be 10*d.* or 1*s.* a dozen, where the rake-maker may have to pay 1*s.* 4*d.* or even 1*s.* 6*d.* a dozen for his handles. Gipsies in Sussex in 1922 said that they could make twelve dozen clothes-pegs in a day, and that out of that quantity of willow wood for which 2*s.* 6*d.* must be paid, two gross of pegs can be made. These being sold at 4*d.* a dozen, bring in a profit of 2*s.* 9*d.* for a day's work, apart from the time of the person who hawks them about. Gipsies are always accused of getting their materials free, and this may partly account for the low prices charged for their wares.

CHAPTER VII

PROCESSES, TOOLS, AND TRADE ORGANIZATION

Spelk Baskets and Trugs

THE tools used and the methods of making oak-spelk baskets are nearly the same in all districts. In Shropshire, apart from the tank required for boiling the oak, only a few special knives are needed; but in the Furness district besides these a 'horse' is used on which to sit and shave the spelks.

The oak-spelk basket is built up on a rim (also known as a bool or 'bow') made of a hazel or ash rod, which has been steamed or soaked in boiling water, and then bent into an oval and the trimmed ends fastened together with a nail. The rods are not split, but are used in the round. In Shropshire the rims are made from 'heatherings' or small oak rods, the ends shaved off so as to form a band of even thickness for about six inches where they overlap. No nails are used in this district. Measurements to ensure the correct size are made by using a notched stick, by which the ribs are also measured.

For the woven bottom of the basket the wood is prepared as follows. Rinded oak poles sawn into lengths of four to six feet are boiled in a tank, long and narrow, like that used by basket-makers for buffing. When thoroughly soaked and still hot, they are quartered with an axe-like knife and a wedge, and then each quarter is split up into bands from one to three inches wide. The basket is woven from these bands or spelks, the wider, stouter ones being used for the cross ribs, while the lengthwise 'chisies' or ribbons, woven in and out amongst them, are thinner and narrower. But the stoutest are only about a sixteenth of an inch thick, and the most difficult part of the basket-maker's work is to split the wood repeatedly, until fine enough, without weakening the bands by getting them too thin in parts or too much across the grain. When the wood is not straight in the grain the riving takes much longer and a man's earnings are less if he cannot shave off long, strong bands of even thickness, or if he has to discard much of the wood. The wood must be hot and damp for splitting and it is re-immersed in the tank when necessary.



THE SPELK BASKET MAKER

A black dye colours the water in which the wood is boiled, but no use is made of this. The same dye colours the hands of the men making the scuttles, and the constant handling of rough wet wood makes the hands very sore for the first few months. A young swill-maker has his hands almost completely tied up in rags, but after two or three years they become hardened, so that they look like blackened pieces of the wood he handles.

Unless the wood is poor and crooked there is no waste, for chips and shavings are used to burn under the tank to heat the water. No other wood than oak would be strong enough for such big baskets if shaved so thin.

The oak-spelk basket of Furness is much more closely woven than the whisket or scuttle of Bewdley (Shropshire) and the oak skip of Chesterfield is again slightly different. The process of quartering and riving the oak into thin spelks is the same in all districts, but in Chesterfield, instead of only the 'bool' being of hazel, the cross ribs also are formed of this wood or else of osiers of two years' growth. The oak strips are there woven lengthwise along the basket, but not across. This skip when finished is not tight enough for coal, but is used for coke, whereas in Furness a swill is so tight and close that it is occasionally seen in the fields holding seed corn for broadcasting. All the oak baskets seen are variations of the one described.

The making of swills is highly skilled work. The industry has been established in the neighbourhoods where it is found for hundreds of years. It is largely hereditary in character, and as a consequence the usual term of apprenticeship is the traditional one of seven years. Some of the masters are beginning to admit, however, that a boy can really learn, as a rule, in three years, and the extra four years were only required so that the master might make a profit in return for the trouble and time involved in teaching him.

It is generally reckoned that a good workman can make six twenty-two-inch baskets in an eight-hour day besides preparing the material from which they are made; a slow one takes ten hours for the same work. In practice the workman does not prepare his stuff on the same day as that on which he makes baskets, but usually spends the whole of Monday in preparing material to last for the rest of the week, re-soaking his strips again slightly as they are required. But as baskets are paid for by piece rates the time spent in preparation is usually reckoned in with time

spent on the making. The actual making of a swill by a clever workman, working under pressure after the material is prepared, is considered to be about three-quarters of an hour. An hour is often taken as the average. About thirty twenty-two-inch swills are made a week, and the wage for this in 1922 was 60s., the piece-rate being 2s. each. Dressing and preparing hools was paid at the rate of 4s. 6d. a hundred.

The rougher quality of the Derbyshire skep made at Chesterfield can be seen from the fact that a workman there can make ten baskets in a working day from seven a.m. to five p.m., even though he prepares his materials on the same day; if all his oak is rived and all material ready he can make from sixteen to eighteen baskets a day.

In Shropshire, again, the craft is considered to be as much skilled as in Furness. One whisket-maker reckoned that a skilled man could earn about £2 a week in 1922 when orders were steady, though he himself was employing two old men who earned less. He thought one to two dozen scuttles could be made a week according to size. No boys are learning the trade because 'there's too much work in it for them'. This, the usual complaint of the old against the young, probably means that in this, as in other trades, the remuneration is not sufficient to pay for the time spent in acquiring the necessary skill.

Swill-makers in Furness were closely organized in a masters' union. Masters are so much more numerous than men in this cottage industry that no workmen's union has been formed. Agreements as to prices and wages have been drawn up and attempts at advertisement are made by the masters' society. As the industry, though flourishing, is always organized in small units, seldom consisting of more than one man with a son or two, or perhaps an ordinary employee, all of them working together in some small shed adjoining the cottage, this opportunity of getting in touch with each other and with outside markets is invaluable. There may be as many as half a dozen men in one village making swills, but, as in all small communities, a good deal of jealousy and rivalry is apt to develop among them, whereas the masters' union, bringing together men from all over the district, gives breadth of view, and local rivalries tend to be forgotten. At Bewdley, in Shropshire, there was no organization among the swill-makers and a good deal of under-cutting went on. The sort of organization which flourishes in time of prosperity may fail as soon as there is a slump in trade. The high prices that are possible in good

times tempt the men to form a union in an effort to keep up the standard of life in their trade, but as soon as it is difficult to find a market, there are sure to be some who will undersell the rest, and the union breaks up. This union so flourishing in 1921 was heard to be on the point of dissolving a year later in 1922.

Another wooden basket that can be compared with the Northern oak-spelk basket in its method of making and its purpose is the Sussex trug. The word 'trug' is derived from the old English 'trog', a tub or boat, a name suggested by the appearance of the basket, which is oblong and shallow, with a curving bottom. It has a tall handle and stands on two wooden feet that run across each end of the basket.

Trugs and truggers are mentioned so far back as the sixteenth century, and the trugger's tools left by John Edwards, a Slaugham trug-maker, to his son James, and described in a 'Calendar of Wills at Lewes', do not differ materially from those used to-day. They were 'one sledge, two sockett wedges, foure adzes, one axe and one hatchet and foure shaves'. In Hurstmonceaux to-day the 'shave' is usually termed a 'draw-knife', but there are districts, notably Norfolk, where it still has the other name. Ash and chestnut rods are used for the rims and handles; these are split in two and the bark kept on so that the smooth side comes inside the basket in the case of the rim, and next to the hand in the case of the handle. In the early days of the trug, before it was developed by Thomas Smith, of Hurstmonceaux, the rim was made of green wood, and bent roughly into an oval shape. It must have been much like the rim of an oak-spelk basket. Nowadays the wood is steamed and bent when hot into a rectangular oblong. Two of these oblongs intersect at right angles, and are nailed together in that position, the one for the handle rising well above the body of the basket, and with the lower part going round the under part of the basket. The other oblong then forms the rim.

The willow for the bottoms of the trugs is quartered and then split into wide, thin strips somewhat after the manner of oak for swills, but it is not boiled first. Willow cannot be split as thin as oak, and when the strip is as thin as it is possible to get it by riving it is shaped and thinned still further with a draw-knife. This thinning, shaping, and smoothing with the draw-knife is the most skilled part of the trug-maker's work.

The strips are left wide in the middle, and pointed at each end; they are too thick and heavy to be woven as with the oak, but they are pliable enough to bend. A wide middle piece runs from end to end of the basket, the pointed tips being nailed in to the rim. The wood having been shaved thinner as well as narrower at the tips it bends easily there. Other strips, each one getting narrower, are placed on either side of the wide foundation strip, slightly overlapping each other until the sides are reached. The overlapping edges are nailed together, and the pointed tips are bent and fitted to the rim, to which they are nailed. The whole principle is that of the clinker-built boat.

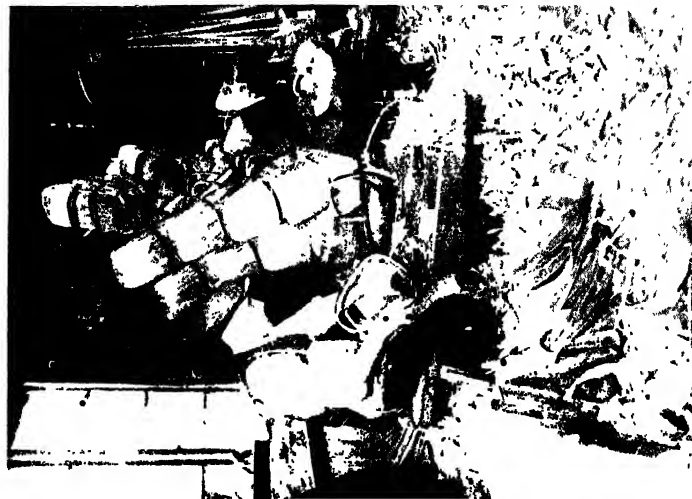
A factory at Hailsham has recently taken up trug-making and has changed the most important process in a vital particular. Instead of shaping the wood with a draw-knife the strip is sent through a machine which saws it to the required thickness, and it is then put in the trug in the usual way. This cuts the grain, and weakens the fabric of the basket, but shaving by hand is a process that takes time and skill, and therefore costs money, so that with this eliminated, the trug is much cheaper than one made by hand-process throughout. The finished article made by machinery is not so smooth and attractive to look at as the hand-made one, but it has a lower price to recommend it.

About three dozen trugs can be made in a 'week if 'day hours' only are worked. That means about eight hours a day. The men have been known to work sixteen hours a day. Working from seven a.m. to ten p.m. a good man can make five dozen a week. All these figures refer to the half-bushel size.

The wages in 1922 were 12s. or 13s. a dozen. Before the War the rate was 4s. 6d. a dozen.

Barrel-Hoops

The methods of making barrel-hoops vary in detail in the different districts in which they are made. In Warwickshire the pole is first cleft with the 'fromard' (known in Shropshire as a cleaving axe), a knife with a handle at right angles to the blade, which is held across the top of the pole and struck with a wooden mallet. One pole is cleft into a number of strips according to its size. These strips are then shaved with the 'hoop-maker's draw-knife', which has a handle set at right angles at each end of the blade. In the shed in which the work is done there are various devices



TRUG BASKET MAKER



of wooden bars fixed to upright posts, which are used for holding the poles and strips steady for the cleaving and shaving.

In Cumberland the worker sits on a 'mare' and holds in his right hand a hammer with a sharp edge. With this he strikes the pole laid in front of him on the 'mare'. The opening having been made he presses the pole against a wooden post in front of him, continuing to lever the opening wider and wider with the tool in his right hand. In Sussex a similar process is followed, but the worker has no 'mare' to sit on.

The original rod or pole is split into two, three, or four parts, and skill is shown in the number that a man can get out of a given number of rods. One old hoop-maker considered that a good man could make as many as eight hundred more hoops a week than one less skilled out of the same quantity of material. The sticks are usually served out to all the men alike in bundles of forty, or if they are very large, of twenty, but the bundles of hoops at the end of the week from equal quantities can differ by as many as eight.

The process next after splitting is shaving, and the exact method differs in detail from district to district. The bark is preserved on one side, but all rough places left from the riving are smoothed off the other. In Sussex this is done on a 'break', a movable beam supported by a post. It has a heavy weight hanging from one end by a long string, a big stone, or a pail of small stones. The worker stands up and leans on it at the other end, and adjusts the slope by his weight. If he puts all his weight on it, it becomes almost perpendicular, but when the weight is resting on the ground it is at an angle of forty-five degrees. In Norfolk when hoops were made there a somewhat similar 'break' was used, and in all districts the draw-knife or 'shave' used for smoothing the wood is the same. In Westmorland the hooper sits on his 'mare', a long bench with a seat or saddle on one end, and a wooden press worked by a foot-lever at the other. The rod to be shaved lies along the bench, and the wooden vice holds it in the position desired by the hooper until it has been completely shaved. The rod is now smooth and white on one side and with bark on the other.

The last process is that of coiling, and in some districts this is omitted. From Hampshire, from Billingshurst, and from Haslemere, the rods are sent to their destination in the

straight, but in all other districts they are coiled and sent away in rings. There are two or three ways in which the bending can be done. In Sussex and Kent the usual way is to work the rod between two arched iron plates fixed one below the other, known as the upper and lower 'jaws'. The rod comes out bent into a semicircle; one end of it is placed in a heavy wooden hoop fixed on a board, known as a truss hoop or gauge, and being already a semicircle it is easily coiled into a complete circle with its ends overlapping inside the gauge. Different gauges are used according to the size of hoop to be made.

The same principle of half bending the hoop so that it can be coiled inside another hoop later on is used in the Lake District, but with one or two improvements. A leather belt passes round a wooden wheel about two feet in diameter, and also round a wooden cylinder much smaller in size, being stretched between the two in the manner of a driving belt used in machinery. The cylinder is revolved and the rods are passed round between the cylinder and the belt, thus being bent. It is possible to do two or three at once by this method, and the labour involved is less than when they are pushed through the 'jaws' by hand. Still another apparatus was seen at Backbarrow, where half a dozen or more hoops can be bent at one time. This was on the principle of a mangle, but the rods passed not only between the upper and lower rollers, but also round and back again beneath the lower roller. With both these machines the worker was in a standing position, and therefore would be able to continue the work much longer than when in the stooping, cramped position common in Sussex. The gauge-hoop in Furness was generally fastened on a long board; usually two different sizes of gauge were found on one board. Another sort of gauge, seen in Ulverston, was like a huge easel, with cross-bars fastened to the uprights; the arms of the 'easel' are bored with holes into which wooden pegs are fitted, the pegs being put in so that a rod coiled between them forms a circle of the desired size.

Other methods of bending were also found, although dry rods can be bent by the barrel-maker by soaking and coiling inside a cylinder to dry, so that the hoop keeps its shape after removal and can be easily held in position while it is being fastened to the barrel.

In Warwickshire heating is used. After shaving the hoops are softened by being 'fired', that is, laid on



LOOP BENDING.

trestles over a small open wood fire for about three minutes. This makes them easier to bend. Another method is to soften them in a steam box, which takes longer, but makes them more supple, though the fired strips keep their shape better when bent. The hoop-maker works under a shed, open at the sides, beside which is the fire, and beneath which is a table and the 'gauge', a name applied here to quite a different apparatus from that described above under that term. The Warwickshire gauge consists of a log of wood supported horizontally on wooden posts about waist high. To the upper side of the log, on the side remote from the worker, is fixed a thinner bar, held a few inches above the log by two wooden pegs. The hoop-maker takes a strip of ash from the fire and puts the end between the two bars of the gauge, gradually pushing it through, with a constant up and down movement, so that it is worked into a curve with the bark outermost. There is ready on the table a finished hoop of a certain size; the curved strip of ash is coiled round inside this, and then five others are bent in the same way and coiled inside that one. The three outer hoops are made of strips six inches longer than the three inner ones. The outermost hoop is fastened with a nail to keep it in shape. Six hoops packed in this way, one inside the other, form a 'ring'.

In Sussex the large heavy hoop in which the smaller ones are coiled is known as a 'shive' or 'truss' hoop, but in Westmorland it is known as a gauge because it varies in size and is used to measure the smaller hoops. The truss hoop is very heavy, much thicker than the small hoop, which is called a 'smart' hoop in Sussex. Here also six hoops are coiled inside the truss hoop, one inside the other; only the two outer ones are fastened together by tying. The four inner hoops are prevented from springing apart by being inside the tied ones. When the whole six are taken out of the truss hoop they are called a 'ring'. In Furness hoops are put together in circles of seven, and seventeen circles make up the 'count'.

Heating as a method for bending 'smart' hoops was never seen in Kent or Surrey, but one hooper engaged in making 'shive' or 'truss' hoops at East Hoathly, in Sussex, used this method. A truss hoop is thick and heavy, and could not be bent by hand without some softening process. Instead of being about an inch and a half wide and half an inch thick, or even less, like the 'smart', the truss hoop rod is about three inches wide outside,

and two inches thick, with edges bevelled from the outside to the inside, so that though it may be three inches wide outside, the flat surface inside is extremely narrow. It is made of ash, and the bark is removed before bending. At East Hoathly the wood is boiled before coiling, and while still hot and wet is pushed by three men together through an apparatus such as that seen in Warwickshire. The apparatus is fixed in the window so that the length of the rod goes out of the window as it is worked through the 'break', and space in the workroom is saved. After being bent, the hoop is coiled inside an iron ring and left to cool and harden.

The only other kind of hoop discovered in the course of investigation was that used on peggy- or dolly-tubs. In every district where these tubs are used there is a demand for wooden hoops wider and stronger than a 'smart' hoop, and having no bark on them. At least one to go round the top is used on every tub; iron cannot be used as it would rust and stain the clothes. These and the rims for sieves are always heated by steam, and may be found in any district, being made in large factories. A mill where these hoops are made was seen in Yorkshire. The ash wood used for this purpose is first boiled or steamed, and the hoops are bent round a wheel revolving horizontally on the surface of a bench, the end of the strip being held by a second wheel in contact with the first. The coopers who use these hoops have not the means of boiling or steaming the wood for themselves, nor do they make any other use of ash wood in coopering.

The supply of the sieve-rims is falling off. Several businesses which used to make them were heard of, but they have given up that part of their trade.

Hoopers in Sussex usually work from six a.m. to six p.m., and to one p.m. on Saturdays. Before the War a skilled hoop-maker could earn about 25s. a week; this was a maximum rate and only attained by the best workmen. In 1922 the corresponding wage was 50s. a week; few actually got as much, even then, but men had been known to make that sum.

A good workman can make in a day up to four bundles of hoops averaging the five-foot size. Nominally a bundle contains a hundred hoops, but this is a long hundred of sixty pairs, or a hundred and twenty hoops. An estimate of output by a man who was obviously a less good workman than some was that he could make about three bundles



HOOP BLENDING—ANOTHER METHOD

a day. The rate for these was 1s. 6d. to 2s. 6d. a bundle, so that at the highest rate he earned (in 1922) 7s. 6d. a day; 39s. a week after working twelve hours a day was the estimate of his weekly earnings given by this man. On the other hand, an employer said that when his men 'press themselves', for example when they want extra money for Christmas, they could make as much as 56s. a week.

Wages for a bundle are paid for the complete work on it, splitting, shaving, coiling, and tying.

Although there were said to be several hundred men employed in hoop-making in Kent, Surrey, and Sussex, no apprentices were found, and every employer says that he cannot get boys to learn. The men in the smaller businesses say that they would willingly teach boys, but that the boys expect to be paid immediately, before they can earn anything, and when they are still an actual expense to the master in wasting his materials. If he cannot earn something at once a boy will not take up the job.

The trouble about apprentices has only arisen since the War. Before that there was the usual apprenticeship of seven years with probably no money for a year, and then only a small amount. The difficulty is twofold; (1) to get a boy to undertake the job at all, (2) to get a boy to accept small enough pay till he has ceased to destroy the master's material. Even sons of hoop-makers do not learn if their fathers can find anything better for them.

In Furness, also, only middle-aged or elderly men were found making hoops, and there had been no apprentices for some years. There is also difficulty in finding labour for hoop-making in Warwickshire. In the Bridgnorth woods, in Shropshire, a small farmer and wood-dealer was considering the revival of this trade which he had abandoned for agricultural work during the War. He hoped to find labour for the purpose owing to the agricultural depression, but skilled hoopers were rare.

The hoop trade is carried on in two or three different ways in different parts of the three south-eastern counties, Kent, Sussex, and Surrey. In East Sussex and West Kent it is carried on, as are most small rural industries, by master men in small businesses. The master buys the wood, cuts it, makes up the hoops, and sells them, personally. He usually employs two or three men, sometimes a son or brother among them, to help in the cutting and making up the hoops, and when he is busy with either the buying of wood, or the selling of hoops,

he leaves the making to his men till he is able to return to it. But he is first and foremost a craftsman rather than an organizer.

In towns where there are big firms using large quantities of hoops, such as Gravesend and Rochester, and even in the village of Burham, where there is a large cement works, one or more hoop-makers are employed in the works. This method of organization is like that of coopers, the greater number of whom to-day are employed in breweries.

The third system of organization exists chiefly in West Sussex. Here hoop-making is one of the many crafts practised by the woodman. When he does not happen to be engaged in any of his other pursuits he makes up hoops in the woods, and then sells them to one of the large hoop-merchants in the neighbourhood. Such a man often becomes an agricultural labourer in the summer.

Two of these hoop-merchants have very large businesses, one at Billingshurst, and the other at Witley, near Godalming. The latter also has a large factory for making walking-sticks. There is a large firm of underwood dealers at Haslemere who make and deal in hoops, and a large hoop-maker at Tonbridge, who has yards at several places, in which work is carried on all the year round.

Even the hoop-merchants proper employ a few men all the year round in making hoops, but the greater part of what they sell is bought from independent woodmen who make up material in the woods, and sell as independent contractors to the merchant, in whom they have a sure market.

There is practically no trade organization resembling that said to be so successful on the Continent. Before the War the trade was entirely unorganized, and although war conditions and demand emphasized the need for joint action the small makers did not rise to the occasion; on the other hand, the merchants saw the opportunity.

The absence of apprentices is also serious. Although there were in 1922 plenty of middle-aged men who were skilled hoop-makers, the small masters were neither taking on apprentices nor bringing up their sons to it, and the trade, if it survives, will be in the hands of woodmen who have learned it as only one of their jobs. The strong position of such men is due to the fact that they always have alternatives in time of trouble. In 1922 the only small makers who were not in distress were those who by luck had some small but steady market of their own, or those who were able to turn their hands to something else for the time being.

Among the hoop-makers no associations of any kind are to be found. A trade union for the men has not been found necessary as so many of them work alongside their masters, and have the same conditions. In still larger numbers they make hoops themselves and sell them to merchants, not as employees but as independent contractors.

On the other hand, associations of masters have been considered for regulation of prices. The more thoughtful recognize that they are cutting each other's throats by the present arrangement, each man trying to find out what his neighbour asks for hoops and then quoting a slightly lower price himself. In 1922 all the smaller masters claimed that they were anxious for an association, or at least thought that there was no other hope for the trade, while the men in bigger businesses claimed that the Sussex character would make any such enterprise an impossibility. They said that none of the men would abide by agreements, but the day after a certain price had been fixed, they would be found underselling in secret. They also claimed that bitter personal experience of previous efforts had been the cause of this lack of faith. They put it down to a cunning stupidity rather than to conscious dishonesty.

It is certainly true that this contention is made in all parts of the south-eastern counties by men in all trades where organization would be of use. Trug-makers and other wood-workers claim the same thing, and the only association that exists is that of the rake-makers.

Crate-Rods

An industry associated with barrel-hoop-making is the cutting of crate-rods. The poles for crate-rods should be thick enough for one, i.e. about two and a half inches thick, or else enough for two. If larger more labour is involved in sawing them. They should be straight enough to cut clear lengths of three or four feet, but need not be so straight as for turnery. The crate-heads forming the corner pieces of the crate are the chief supports.

There is a Crate-Makers and Coopers Association in Staffordshire to which the wood dealer can address inquiries as to the business reputation of any crate-maker who wishes to buy from him. But this is an association of urban businesses producing crates and tubs, and there is no corresponding association in the woodland districts. In fact, the free intercourse amongst the coopers and crate-

makers of the pottery towns would astonish the secretive woodlanders, and if the crate-makers and coopers of the Five Towns could get into direct touch, and establish friendly relations with the woodlanders of the south of England, the mutual ignorance which is largely responsible for the spasmodic fluctuations in the trade would stand a better chance of being eventually dispelled. The mere meeting around a table once a year, one of the aims of any association, is an educational experience to a man who seldom leaves his village, and though there are problems of trade which lie beyond the power of remedies provided by any union, it is a spiritless attitude to give up in despair the solution of those that might be settled by this means.

Fencing

In the making of split chestnut fencing, which is formed of small upright stakes held together by wire, the work resembles that of splitting rods for hoop-making except that for fencing the bark is removed, and that the rod or 'bat' which is to be split is usually of a much larger size. When the wood has been split it is not shaved clean, as is done with a hoop, but is merely tied up in bundles according to length, and sent either to the head-quarters of the employing firm or to some merchant who deals in fencing. There the stakes are fastened together in lengths of so many yards each, by wire twisted round them at top and bottom by a machine.

Another sort of rived fencing is the familiar 'post and rail'. The rails only are rived and are fixed into upright morticed posts. Oak is sawn for the three or four-holed posts into which the rails are fixed; to make each slot three holes are drilled with a brace which are then cut out with a chisel. Pointed, or 'prick', posts are also made, to be driven into the ground midway between the morticed posts, the rails being nailed to them when fixed.

A given acreage of woodland, if grown for hoops, will be cut twice in fourteen years, one man being employed for each cutting, whereas, if the same acreage were grown for fencing, four men would be required to cut it at the end of the fourteen years. Thus, in the latter case, the labour required for the cutting is twice that needed for hoops, so that fencing means more employment in the neighbourhood. Again, fencing was said by an employer to provide work

all the year round, but hoop-making is done only in the winter, leaving the men to look to farm work in the summer. The work that needs four men on fencing every fourteen years, and only one man on hoops every seven years, is that of cutting and hauling in the woods. In addition there is the labour in making hoops, or making fencing. This employer claimed that fencing required more labour. It was bigger wood to split, various sizes have to be selected—fencing is often made with one tall stake, and then two or three short ones—and then it has to be twisted with wire. Nevertheless the process of shaving, which is highly skilled, is not necessary for fencing, and in this district, Haslemere, the hoops were not coiled, a process which provides additional employment elsewhere.

The same employer continued the comparison of hoops and fencing in the matter of wages. There is a certain amount of difficulty in estimating the wages bill by the acre for hoops, but it may be reckoned that men earn from £13 to £16 an acre. This includes all the labour put into the wood from the acre, from cutting down the rods till the hoop is completed. The men are paid £1 a load to cut the rods, and from 1s. 6d. to 2s. a bundle for making the hoops, and there are one hundred and twenty bundles in four loads, with an average yield of four loads to an acre. At an average of 1s. 9d. a bundle the amount paid for labour of cutting and making hoops from an acre of woodland is £14 10s.

In making fencing the labour bill amounts to £40 an acre at the end of the fourteen years required for the growth of the wood instead of this average of £14 10s. which would be paid out twice in fourteen years for hoops. This shows how much more labour goes into the fencing which can be cut from the same acreage. A big bill for labour was felt to be an advantage to the district, because it meant either more men employed, or the same number of men for a longer time.

The manufacture of fencing in Sussex has some of the forms of organization of hoop-making. Sometimes it is part of the work of a woodman. He peels and splits the 'bats' and then sells them to a merchant. It may be one of the jobs to which he turns when hoop-making is not required. On the other hand, some men are employed by firms and sent out into the woods to cut and make up during the winter months only; still others are employed in the yard the whole year round.

One employer made both hoops and fencing, and at the

slack time in 1922 turned from his hoops to split chestnut fencing. This was in Surrey, where the coiling of hoops is not done, and the hoops were therefore simply straight rods which had been split and shaved. They were bound together with wire and made into fencing; this was a rather extravagant method, as hoops are shaved while this is not necessary for fencing. Still, there happened to be at the time a slump in hoops and a boom in fencing, and the material was sold to advantage in this way.

Besides independent woodmen and big wood-yards there are a number of smaller business men who have been in the habit of merely cutting wood for delivery to a middleman who then makes up the fence. Others have formed small companies to do the whole of the work themselves.

A heavier sort of fencing made with 'spiles' or short wooden stakes much thicker and bigger than those for the split chestnut fencing is made in many villages of Kent. The workman is sometimes called a 'spile-turner', though spiles are not turned. The work is done as a rule in conjunction with many other sorts of work, ladders or hurdles being made by the same man. In Warwickshire, too, hurdle-makers often make up gates with cleft rails, but there is not a great demand for them.

Hurdles

The ordinary sheep-hurdle found in all those districts where sheep are folded, in Gloucestershire, Kent, Suffolk, and other counties, is described in Gloucestershire as being seven and a half feet long and three and a half feet high. It is made of six rails, a pair of 'heads', a pair of 'braces', and one upright. The poles are sawn to the right length and then split with a 'fromard', in the same way that the pole for a hoop is split. A three-cornered 'break', an erection of logs or posts with the log on the third side higher than those on the other two, helps to hold the pole in place when it is being split.

After being split the rails are smoothed off on both sides, both the round and the flat, by a draw-knife. This is done in Gloucestershire on a bench or table about waist high, but in Norfolk on the same sort of break on which hoops are shaved, at which the workman stands. Counting from sawing the lengths off the poles to the point of stacking the hurdles, each piece of wood passes through the hands ten times. Work with a draw-knife always requires skill, but

again as with the poles for hoops, a great part of the skill is shown in the number of rails that can be split from one pole. Comparisons cannot very well be made on account of the difference in size of the materials. One pole may make two, four, six, or eight rails; a record number of rails from a very large pole was thirty-two. Apart from size the better the quality of the wood the more rails will it split.

The ordinary sheep-hurdle is made very much in this way in whatever district it is found, though the measurements may differ from place to place. The hurdle of the eastern counties is a six-bar hurdle, six feet nine inches by four feet. Another description has six bars, two braces, and three uprights, the whole being six feet by three feet in measurement.

In Hertfordshire the hurdle usually made is six feet long with five bars; it is split and morticed. The bars of the hurdles are split with a knife known as a 'throw'. For holding the pole a wooden frame is used or else a forked log, as in Lincolnshire, where riving is done for fencing though not for sheep-hurdles, rope or wire netting being in general use there for that purpose. Riving is done with a special knife having the blade set at right angles into a wooden handle. The ash-poles are sawn into the required length. The forked section of a tree trunk fulfils the purpose of a vice, being firmly fixed on two blocks, which raise it to the necessary height, so that one of the forked branches is above the other and farther from the 'river'. The worker holds one end of the ash-pole, keeping it steady by inserting the other end in the fork. Then, holding the knife across the end of the sapling he strikes it several blows with a mallet. The river then works the knife down the length of the pole, splitting it along the grain into two rails, which will stand much more strain than sawn rails. Very uneven or knotty wood cannot be rived, so that only the straighter and better poles can be used for rived fencing. It is, however, hard work and skilled, so rived rails are more expensive than the sawn kind.

Ash and willow are the best woods to rive, though birch can also be used. In Lincolnshire and a few other districts, such as Nottinghamshire, the only hurdle made is a gate hurdle. Materials for these are usually sawn and not rived. The 'trays' made in Huntingdonshire of willow with six bars, not morticed, but roughly nailed, are a variety of the gate-hurdle. Another sort of gate-hurdle is made in King's

Lynn. It is all sawn and many are made from foreign wood as well as English. They have two heads, five slats, and three braces, the heads being morticed.

There are several makers of wattle-hurdles in Dorset, at Bere Regis, near Blandford, and in other places, and also in Hampshire, but elsewhere they are seldom made by the small independent men who work for themselves. They are used as wind-shelters for the lambing season.

The same tale of lack of apprentices is heard from the hurdle trade as from that of hoops. In Warwickshire two or three men of the same family are usually all that are employed in any of the underwood trades, and if outsiders were taken on they were often elderly men, and the only young men being trained were sons working with their fathers. No other lads could be induced to take up the work, although some employers say that they could extend their businesses if they could get skilled men. The difficulty of getting skilled hurdle-makers is still more acute in the East Midlands. The absence of apprentices was marked even in Hertfordshire where the prospects were said to be good, and except for one or two sons working with their fathers, one young man in the Royston district working as a learner with a hurdle-maker, with the intention of setting up on his own when skilled, was almost the only instance of an apprentice in the trade.

In Devonshire hurdle-making is done by agricultural workers, and is not a specialized industry. The County Council held classes in woodland and agricultural work until the War, but in 1920 there were no entrants for them.

In Dorset, hurdles are made by estate woodmen and also by a few hurdlers employed by them. Whereas in former days the hurdler expected to make a little more than the farm labourer, by virtue of working harder and for longer hours, it was said in 1922 to be difficult to make as much, and therefore the work did not attract young men. In Winterslow 11s. a dozen was paid at this date for making hurdles. One hurdler said he used to give his employee half the price at which he sold the produce, but after the rise of prices during the War he gave a lower percentage. In 1922 the best hurdler in Hampshire could not make more than about 50s. a week, and the majority made less than the agricultural wage. In Gloucestershire the question of how many hurdles could be made in a day was discussed. One very good workman once made eleven hurdles in just under ten hours, but that was when the worker was young

and also when he was using the best material. Another worker made ten or eleven a day, probably a day of at least ten hours if not more, for he too spoke of his youth, but now six or seven in the same long day is all that he can manage. One young man gave 'three parts of an hour' as the time in which a hurdle could be made, but there are few who could keep this up for long. One hurdle in an hour is a more usual reckoning.

So many hurdlers work for themselves that the question of time-wages does not often arise. One man who occasionally employs men said that in 1922 the wage was 15s. a dozen. He had seen fluctuations in wages from 4s. 6d. to 22s. 6d. a dozen; the former rate would be about thirty-five years ago, and the latter rate during the War. In Warwickshire the pay was 4s. for a dozen hurdles just before the War, and in 1923 it had risen to 15s. a dozen.

Of the Suffolk and Norfolk hurdles a man was said to be able to make six a day, and in order to make a living at the industry he must make at least three dozen a week. This estimate was given by an old man who can now only make four a day. This old man makes the larger type of hurdle, and the reason why estimates of times taken to make hurdles often differ so much is that the size of hurdles varies from district to district. Of the smaller hurdle, 6 feet by 3 feet, the estimate in Norfolk is that some capable men can make a dozen, although few men can make more than ten, in a twelve-hour day, and six in an eight-hour day is an ordinary average. Wages in one case were said to be 12s. a dozen for making hurdles, in another not more than 8s. A dozen hurdles a day were made by the man who earned 8s. for it, but this amount could only be earned in summer when he could work about twelve hours. Not more than five hurdles a day were made by him in winter.

A small factory making hurdles and rakes paid 35s. a week regularly and this was considered a good rate of wages, being 10s. a week above the agricultural wage of the district then current. Apprenticeship in the factory was from three to five years' duration.

In Hertfordshire four dozen hurdles were stated to be a week's work, ten hurdles being a good output for one day; another maker said he could sometimes make a dozen in a day, but this depended on the wood; often he could not complete a dozen in the longest day possible. A wood dealer near Watford said that he no longer employed a hurdle-maker because the man expected to earn from £3 to

£4 a week, whereas the employer's profit on the week's work was only 30s., so he did not think the business worth carrying on. If the demand for hurdles justified him in employing three or four hurdlers this would obviously have been worth while, but it is rare to find enough work for more than one hurdler in a district. One maker said that it 'requires a lot of contriving' to make a livelihood, and one journeyman considered that the pay was good enough if only the work were more plentiful.

For wattle-hurdles the wages at Melton Constable, in Norfolk, were 5s. 9d. a dozen in 1923, and it was considered possible to make three hurdles in an hour.

Hurdle-making is one of the industries usually found as a part-time occupation. In Gloucestershire and Kent they are often made by the village carpenter, or handy-man, and in all districts where they are made at all farmers often employ a man for a few weeks at a time to make hurdles both for their own use and for sale, often of poles cut on their own land. This was found in Essex, Suffolk, Kent, Huntingdonshire, and generally in the districts where hurdles are used. In a few cases the shepherd is a hurdle-maker, but only for his own flock. Smallholders undertake the work as a spare-time industry; wood dealers and saw-mill owners and other rural tradesmen employ hurdle-makers or make up hurdles themselves. One of the most flourishing businesses in Hertfordshire is carried on by a man and his two sons, who own horses and do general carting, and sell fire-wood and pea-sticks. If a hurdle-maker has not enough capital to buy underwood or poles he may work as a jobbing man for farmers who supply the poles.

Generally hurdles are made up in a field or wood-yard. Wattle-hurdles are sometimes made up in the woods.

One of the surest and steadiest markets all over the eastern counties is supplied by a small factory set up by an ironmonger's merchant in Suffolk for making rakes and hurdles, and nearly all the wholesale trade of the district is supplied by this man. Retail trade he does not touch as he would then be cutting across the trade of his own customers.

Besoms

There are several different ways of making a besom or rough broom. They vary from district to district and according to whether the industry is a part-time one done because time is to spare and material handy, or a whole-time one by which the worker must make his complete living.

The most primitive method is still in use among the gipsies of Kent and Sussex who simply press together bundles of birch twigs with their hands, rolling them on their knees as they sit, and bind them with anything they can find. A further step is taken in Suffolk by the woodman who makes up besoms in the wood in the intervals of cutting and hauling, as a means of using up material. While standing he takes the bunch of twigs in one hand and gives the strip with which he is binding it one turn round the bundle : he then puts the bundle under his foot to hold it and pulls on the binding with his hands to tighten it, loosening, rolling a bit, and tightening several times. The position of standing and stooping while pulling at the strip is a very trying one, but the fact that the bunch of twigs is held by the feet enables the woodman to get it much tighter than it can be got by the gipsy who sits at his ease on a stool. Not more than a few are made in any one day by a woodman, and it is convenient to make them where the material is found, so that no easier method which would necessitate apparatus has been tried.

The besomers of the New Forest, at Verwood and Redlynch, also use the foot for tightening the bond with which it is tied. They are alone in employing an extra process, which they claim that no one has guessed and which makes the quality of the besom different from that in which the process has not been used. The secret is that the twigs are boiled for about five minutes before they are bound, and if the shaft is not put in at once they are boiled again, so that it can be pushed into the tightly bound heads while the twigs are moist and soft.

At Baughurst and Tadley, in Hampshire, the method in use seems to be much the same as that in Durham. In the latter county the worker, while binding the heather, sits astride on the 'horse', a sort of vice. He tucks one end of the lap into the heather bundle, winds it round the bundle, and catches the other end of the lap in the vice, where it is held between a wooden bar and a sloping wood block with a pad of leather on the face, the bar being held down by a treadle, worked by the feet. Thus the worker tightens each lap, after which he fastens the end, and when all the laps have been put on he pushes in the shaft and fixes it with a nail. The chief difference here is that in North Hampshire the shaft is not nailed ; the horse and the method of tightening are much the same.

A variation of this method is found in Norfolk. Here the

broom-maker sits on a sloping plank with a hook, turned away from him, in the lower end of it. A rope is fastened round his waist, having a short length of about two feet or three feet with a small spliced loop just large enough to go over the hook at the other end of the plank. The rope is given one turn around the bunch of ling or birch and then the loop is slipped over the hook. The broom-maker slides backwards up the plank, sitting on a piece of sacking, until the rope is taut, and by this means gives the pressure he desires to his broom.

The Broom Squire in Surrey uses a 'saddle' with a clamp in it, and this vice grasps the strip which is binding the bunch of birch twigs. He then presses against the saddle while he holds the twigs, and the pressure on the strip tightens the bundle.

A method differing from any of these, and one which seemed much better, was seen both in Nottinghamshire and in the North Riding of Yorkshire. The device used is best described as an immense pair of iron pincers, which hold the bunch of heather in their circular grip. They have one short arm fixed firmly with a metal band to the top of a wooden stump, which is fastened to the floor; the other arm reaches nearly to the floor and has a pedal on the end of it. The besom-maker in Pickering sits on a bench beside this horse, or in Mansfield stands beside it, takes up a bundle of heather, and puts the end of it in the pincers, causing them to grip it tightly by pressing the foot lever away from him. He then sticks the 'needle' (a grooved, pointed blade set in a wooden handle) into the bundle, and threads the end of a lap down the groove of the needle, which he then withdraws. Instead of the needle a tool called a 'hundred putter', somewhat similar in shape, is used in Hampshire. The end of the lap is thus firmly fixed in the bundle of heather. The worker then releases the lever slightly and winds the lap round the bundle, tightening it by pressing it in the pincer-vice once or twice. In the case of the top and bottom laps on each besom the end of the lap is turned twice through the heather beneath, and out and over itself, the end of it coming out of the heather bundle being caught down by the next lap. The intermediate laps are finished off with one turn under and over instead of two, as with the top and bottom laps.

One old besom-maker at Pickering boasted that he never counted the number of laps as he put them on, but instinctively put on the right number, either five or nine. It might

be noticed, however, that some of those intended to have nine had only eight.

The pincer-vice seems to be of recent origin. Fathers of present-day besom-makers in Nottinghamshire did not use it, but it is so simple that any village blacksmith can easily make one. The advantage is that whether the worker sits, as at Pickering, or stands, as at Mansfield, he is in an easy natural position, and that the pressure comes on that part of the besom where it is most wanted. The object of pressing is to get the heather into as small compass as possible so that the laps will not loosen and come off. When the pressure comes directly on the heather this is better achieved than when the pressure is put on the lap, for this often breaks when too great a strain is put on it, and pressure coming only at second hand upon the heather cannot make it so compact as when it receives the full force of all the strength exerted. The principle of the saddle-vice is to hold one end of the lap and pull on that, but that of the pincer-vice is to press the bunch of heather in its grip.

Besoms are bound with many different sorts of laps or bonds, according to the district. The most universal method of binding is to use strips of ash, which are prepared in the following manner. A piece of ash about three feet long and six inches thick is used, and from this a great number of laps can be cut. The bark is peeled off and the piece of ash laid on a trestle and hammered well with a heavy hammer. This loosens the fibres, and a bunch of laps can be worked off with the help of a short, broad-bladed knife, but they must not be cut off; when they fail to come away easily, more hammering is needed. When they have been taken off the whole length of the wood they are split up into the necessary width. All the wood is used except the core. Ash laps or bonds are used in the North Riding of Yorkshire and Durham, by the more old-fashioned Derbyshire men, in Surrey and Sussex, and many other districts.

In Hampshire the brooms were sometimes bound with willow bands, and in Suffolk, where they are made in the woods as part of the woodman's work, they are bound with three strips of hazel or 'wicker' indifferently, or even with wire. The oddest binding for brooms was found at Hevingham, five miles north of Norwich; the men gather briars from the hedges, split them, and remove the pith; these processes together are known as 'shrieding'. An old man in Essex uses hazel strips.

Wire is used in several districts to bind the broom, but

never by the best besom-makers. Its advantage is that it saves the time spent in preparing the ash, which is a large proportion of the total amount of time required to prepare the material used. But wire will not stretch, and is not sufficiently pliable to make good binding. The best material for the modern besom-maker who wishes to economize in time as much as possible has been discovered in Nottinghamshire and Derbyshire. Cane is the material used, and it has the strength and pliability of ash. Although the cane requires splitting, one old man said he was able to supply his son with all that he required for a day's work in one hour; if he had been splitting ash for the same purpose, he would have taken four hours to get the same quantity. For those who have less time than capital, cane seems the better material. The only besom-makers in Nottinghamshire still using ash are some part-time men, who have not troubled to perfect their methods.

To learn besom-making properly takes a long time; one girl on Wolsingham Moor had been working for five years and was 'just beginning to get into it', though she was considered a better worker than many men. This was the only place where a girl was found making besoms, the work usually being considered too heavy for them, yet this girl was small and slight and not of the robust type of many women field-workers. On the Durham moors workers were paid 7s. a day, working about eight hours; they made about eight dozen besoms a day. Labour is the most serious consideration in the cost. At Hevingham the men make four dozen besoms a day if they have also to get the stuff ready, for splitting the brambles and 'shrieding' them, or taking out the pith, is slow work. Apart from this, nine or ten an hour can be made, and in Derbyshire five dozen a day. Two bundles of twigs make a dozen besoms and each bundle or faggot cost 3*d.* in Norfolk in 1923, or 30s. a hundred faggots, the hundred being the usual long hundred of a hundred and twenty.

As very few besom-makers are employers of labour, except perhaps a son, the question of wages does not often arise. The greater number of besom-makers work as their own masters, both those who make besoming their whole occupation, such as one or two in Nottinghamshire and one in Yorkshire, and those, who constitute by far the greater number, who make besoms as a part-time occupation. Occasionally one besom-maker will work for another who has a large supply of wood, but it is more

usual for them to work on their own account. Besom-making is one of the occupations that can well be carried on in conjunction with something else.

Both in Yorkshire and Nottinghamshire one or two men were found whose main occupation was carting, and owning a horse and cart for hauling wood from the forest, found it convenient to undertake besom-making in their spare time and in bad weather.

Farmers, also, in Yorkshire sometimes employ men in winter on making besoms, which can be done under shelter when the weather is too bad for farm work. Again, having their own horses and carts, the heavy expenses of 'leading' heather and other materials are avoided, and they have a better chance of making good profits. In the North Riding of Yorkshire, around the village of Pickering on the southern edge of the Cleveland Moors, there are men who used to employ besom-makers but in 1922 were only dealing in besoms made by the farmers on the moors. The dealers do not depend on besoms alone for their living but keep a shop or deal in rags and bones, rabbit skins, and many other things. Birch-brooms are often made as a sort of by-product by any one working or dealing in wood, such as a large timber merchant in Furness, who dealt in all manner of things made of underwood, and one or two smaller men of the district who also made them in their spare time.

Birch-brooms are often made up by woodmen in Norfolk and Suffolk in the woods, and they are made at Hevingham, near Norwich, as the spare-time occupation of smallholders. The small farms of the neighbourhood have very light soil and grow chiefly turnip seed, peas, oats, and potatoes. Without something in the way of a subsidiary industry, a man with but ten acres of this land would find it difficult to live.

The besomers of Hampshire, both those of the New Forest and of Baughurst and Tadley, are 'commoners'; they are very hard working and save money to buy their own houses and a little land. Living in a district of heathy commons, they find besom-making a very useful adjunct to their other occupations.

Charcoal-Burning

Charcoal-burning is done in the woods and involves the use of no special tools or apparatus. The foundation of the pit is begun with a centre pole as key-stone and a few pieces of small wood around it to catch fire quickly when it is

withdrawn. The largest sticks of wood, all of which have been cut into lengths of about a yard, are then piled end-wise, sloping towards the central pole; next come the smaller sticks until the whole is a dome-shaped erection about five feet high, and seems to be piled in three sections, one slanting up from the ground, the second sloping towards the top, and the third almost flat on the top. When this has been done the pit is lightly thatched with the grass and rushes that grow in the woods, and all is cemented down with damp earth upon the top. The central pole is then withdrawn leaving a hole like a chimney from top to bottom of the pile. Three-quarters of the chimney is filled with cold charcoal, a few hot embers are dropped in, some more cold charcoal, and the making of the pit is considered to be finished. When flames begin to appear a sod is placed over the central hole to check the draught, and after that it is a matter of moving wind-screens between the wind and the pit, and keeping water at hand to check any signs of flame.

The wind-screens in Furness are about ten feet high and five feet wide. A frame of poles is thatched with bracken and supported by forked sticks against which it leans. It is so light that a man can carry one on his shoulder with ease. In Sussex the wind-screen is built up of separate bundles of twigs and bracken not fastened together in any way, and when the wind changes the erection has to be taken down, bundle by bundle, and put up again in the same piece-meal fashion where wanted.

During the night, charcoal-burners make rounds every two hours to see that the screens are well between the pit and the wind, or to throw on water if this should be necessary. The wood must be evenly charred through, and if flames are allowed the wood will be burnt and not charred. The whole art of charcoal-burning lies in regulating the draught so that the maximum amount of wood is charred and the minimum burnt.

The length of time required to char the wood properly differs according to the greenness of the wood. Green wood usually takes about two and a half days and nights, but wood that has been cut for some time may only take twenty-six hours. In Sussex, however, a charcoal-burner said that a pit containing anything up to four loads (there being a hundred and forty-four feet in a load) burns for one day and one night, and any larger quantity burns for two nights and two days; it then takes one day and night to put it



CHARCOAL BURNING
STAGES IN THE CONSTRUCTION OF THE PIT

out, and another day and night to 'draw it', or separate the charcoal from the covering of reeds, and put it into sacks. He claimed that the green or dry state of the wood made no difference to the length of time of burning, but only to the amount of charcoal produced. Green wood does not produce so much charcoal as dry. In the Lake District the putting out and drawing seem to be done in a slightly less lengthy manner. When they think the time is due, the charcoal-burners pull out a few pieces of wood at the bottom of the pile; if these come out charred almost to the tip, it is a sign that the pit is charred right through, as the wood at the bottom is the last to be touched by the heat. Water is then thrown on lavishly and the 'cover', or soil and rushes, which ought now to be entirely scorched through, is scraped off with a primitive-looking instrument named a 'cow-rake' but pronounced 'corrack'. A long-handled small spade or shovel is also used, called a 'shool'. The 'corrack' is merely a lump of wood with an edge to it, attached to a long handle and used like a hoe.

At the village of Stirchley, near the Wrekin, there is a small factory for the distillation of wood spirit, and there is another at Greenodd in Furness; charcoal is one of the by-products of this type of factory. The wood is baked for twenty-four hours in oblong retorts inside air-tight kilns, the gases being driven off in the process of baking through pipes which pass through tanks of water. Thus the gases cool and condense and the liquid is collected in a tank. This liquor is then mixed with lime brought from South Wales, for the local limestone of Shropshire is not suitable, and goes through further processes of distillation, and ultimately various products such as acetic acid and wood naphtha are obtained.

In Furness the men are paid according to the amount of charcoal they produce. The pre-war rate was 25s. a ton; in the autumn of 1920 the rate rose to £3 10s. a ton, and though it was lower in 1921 it was considered improbable that it would sink below £2 a ton for some years to come.

In fine weather the men can each make as much as two or three tons in a week, but bad weather hinders the output, and there are occasional times when none can be made at all. Three men reckon to burn sixteen pits in a fortnight, but the pits differ in size, from five yards in diameter to a good deal more. While the season lasts there is no limitation of hours and no leisure. The work continues day and night, and all days of the week, but the season is

very short. It begins usually towards the end of August and goes on until the wood has been cut and burned. In the Windermere district this is seldom more than two or three weeks, but one year they worked eleven weeks, from late in August until about the eleventh of November. During normal times the work never goes on after the eleventh of November, as the weather gets too rough for life in the woods.

In the Wyre Forest of Shropshire it was impossible to meet a demand for charcoal owing to the unwillingness of men to sit up all the night in the woods watching the charcoal fires, even when 25s. was the price offered for this vigil. This sum was paid for the complete job which probably took two days and one night.

On Lake Windermere, and near Midhurst, in Sussex, the burning of charcoal was considered part of the ordinary work of the woodman. It was always done in the former district by groups of three men, and these were usually a father and two sons. In this manner it is taught by father to son, and there is no question of apprenticeship.

The season for burning charcoal in Sussex is not so clearly defined as in the Lakes. Even at Midhurst, where it is a more recognized profession than in other parts of Sussex, and also in Kent it is done at any and all times of the year.

In the chemical works near the Wrekin there is no handling and scarcely any skilled work in the processes, the whole depending on the adjustment of the plant. About a dozen men are employed, and their work, except for that of the furnace men, chiefly consists in putting the logs into the tanks and handling the finished products.

Charcoal-burners always work in groups of three in the Lake District, where the industry is more widely practised than anywhere else and seems to have preserved primitive methods and the old organization more than in the other counties. They are usually members of one family, and the industry is simply part of a woodman's trade, being taught in this manner by father to son. The father takes the responsibility of seeing that some one gets up every two hours to look to the pit, and the sons learn from him each detail of the profession. They try to keep as many pits going simultaneously as they can, each in a different stage, so that during the quiet periods of one, work can be progressing on the others.

Charcoal-burning goes on in Sussex quite as extensively as in the Lake District, but as a profession it is not quite so

clearly differentiated. Comparatively few men would be recognized as charcoal-burners, for the burning is done as part of other agricultural or forest work. Interesting old customs, such as building the traditional hut, have been lost, and the burner, who seems to work alone and not as one of a group, may live in any hut, of corrugated iron perhaps, or in an army tent. The only district where this is not the case and where something of the old order has been retained is near Midhurst, on a large estate, where one of the woodmen is a recognized burner and is bringing up his sons in the same pursuit. His hut was almost of the same prehistoric pattern as those of the burners in the Lakes, and his methods closely resembled theirs. So little of this work is done in other districts that it is impossible to discover what methods are pursued.

Hay Rakes

There are many variations in the methods of making rakes. First there are those made entirely by hand; these are chiefly produced by men working in a very small way. An old man near Bedale, in Yorkshire, has no machinery of any sort, but uses simply carpenter's tools, and one sharp round instrument for shaping the teeth. His rakes are smaller than the usual northern rake. Again at Askham, near Penrith, and at Warcop, near Brough, the work is chiefly joiner's work with sometimes a lathe used to turn the handles. At Smarden, in Kent, and in the small village of Tilby, near Dunmow, in Essex, rake materials are still rived and every process is done by hand. A wheelwright at Capel, near Dorking, also makes them simply with joiner's tools.

Many rake-makers have a small engine to turn lathes and drive a saw, and also plant for steaming the poles to straighten them. In a few cases where rakes are made as a side-line at large timber mills, even automatic lathes are used to turn the teeth and handles. In this case long pieces of wood must be used for the teeth in order that they may be fed to the machinery. In many small workshops the gas engine is almost the only innovation introduced into the method of rake-making for the last hundred years or so. It saves a great deal of labour and where it is not used the work is of a very strenuous kind.

The wood of which a rake is made passes through the maker's hands a great number of times. Some makers have estimated that there are from fifty to sixty processes from the cutting of the wood to the finishing touches. When

brought in, the wood is rinded—i.e. a narrow strip of bark is peeled off to prevent it rotting; it is then stacked for a year to season. When seasoned it is sawn into lengths and re-stacked in an open shed. For rake-handles fairly straight poles are selected and roughed out with an axe, bark and rough pieces being removed. They are then softened, either by baking or in the steam-box, which is supplied with steam by a small furnace. The straightening is done by means of four blocks fastened to an upright post so that they project horizontally from one side of it with varying spaces between them. The pole is held with one end fixed between two of the blocks, and wrenched into the required straightness. After being straightened, when the pole or 'stale' is dry and set, it is sometimes shaved with a draw-knife (a two-handled blade), and further smoothed and tapered by means of the 'stale-engine'. This is a kind of plane made of two blocks of wood fastened together, with a hole large enough to admit the stale made between the two. Round this hole blades are fixed aslant. The pole is passed through the hole and one end is held firmly between the blocks fixed to an upright post which have already been used in the straightening process. The 'stale-engine' is worked right down the length of the pole with a circular movement, shaving it with the blades, tapering being done by screwing the two parts of the 'stale-engine' closer together from time to time and so moving the blades nearer to one another. For rounding the end of the stale the primitive pole lathe is still in use in some rake-makers' workshops. But not all the rake-stales have rounded ends, some being merely sawn square. Rake-stales turned on automatic lathes are inferior because by this means they cannot be tapered.

The butt end of the rake-stale is now sawn up about eighteen inches and bound with tin at the junction; the sawn ends are then pointed to be fixed into the rake-head. In the South and Midlands all rake-stales are split, but in the North, Yorkshire, Westmorland, and Cumberland, where the hay fields are often hilly and rough, a stronger tool is needed. Rakes here are usually made with a bow, or even two bows. A firm in Addingham, Airedale, does some hand work in the bending of rake-bows, though most of its other work, which is chair-making, is done by machinery. The ash wood used for the bows is first boiled, or steamed, and a strip sufficient for four bows is bent into shape between a curved wooden block and an iron hoop fixed to a bench.

Rake-heads are sawn and planed and then bored with holes for the teeth. Where there is no power-driven saw, they may be hacked out with an axe.

The teeth are sometimes split from blocks, each one shaved to taper at both ends and then cut into two. Other rake-makers turn the teeth on a lathe, and the automatic lathes already mentioned are sometimes found. But machine-turned teeth have the disadvantage that they cannot be tapered, and therefore do not fit securely into the holes in the head unless they are wedged or nailed, which involves too much labour. The teeth are driven into the head and then pointed.

Owing to the immense amount of hand labour necessary to the making of a rake it is often said that it is very difficult to make the industry a profitable one. The use of the power-driven saw and lathe for cutting up the poles, sawing up the split ends of the stales, cutting out the heads, and turning the teeth, reduces the labour slightly, but attempts to extend the use of machinery in rake-making have not met with success.

A long training is considered necessary for rake-makers, as the processes are many and skilled. In 1922 rake-makers in Surrey could get 55s. a week, but in Sussex, four miles away from the same place, they got three to four shillings less. The pay is all by piece-rates. It rose a little towards the end of the War and in 1923 was about £2 for a fifty-five to fifty-six hour week. The selling price of a rake is now 1s. 9d. and before the War was 9d. The pre-war rate for cutting one hundred and sixty-eight teeth (enough for one dozen rakes) was 4d.

The hay-rake industry is often carried on by a man as his main livelihood, with the shaft-making or some other wood-craft as a subsidiary industry. It may also be combined with dealing in timber and underwood, in cases where a power-driven saw has been installed. The rake-maker who uses a lathe may also do other kinds of turnery. The output of one rake-maker includes wheelbarrows and other work with English timber; others also make ladders, and another was a smallholder.

Rakes are also made at a few big mills as at Wellington in Salop, Longhope in Gloucestershire, Hockley Heath in Warwickshire, and Addingham in Yorkshire. Several examples of the different types of organization among rake-makers are to be found in Suffolk. There is one man in whose family the business has been for ninety-seven years

and who has lost a large part of it through the coming of the big wholesale factory to the district. He employs one boy, and does most of his work by hand, and in spite of the wide connexion that he got by inheritance will very likely fail, for he has no other means of livelihood.

The Rake-Makers' Association was formed during the War in order to be in a position to lay its affairs before the Government. None of the individuals in it would care to tell each other what profits they make, how many persons they employ, and other things of the sort ; but none of them objected to informing the secretary, and he was then able to use the information for protecting the members during war time.

The Association was founded by a member of the firm of ironmongers' merchants mentioned above which has a factory for making rakes and hurdles. The subscription is only 5s. a year, and the overhead charges are borne by this firm, for the annual business meeting takes place and the clerical work is done in London in the office. The expenses therefore really come out of the iron trade and not the rake trade, and the secretary, as manager of this large firm in the city, has had a wide business experience such as no small country rake-maker could get. A number of the rake-makers recognize that the success and influence of the Association are largely due to the position and personality of the secretary, and the knowledge that he brings to bear upon important questions.

Even now that the War is over there are a number of problems in the rake trade, and these the Association attempts to settle. There is first the question of foreign rakes. English rakes would be quite sufficient to meet the demand, but it is very irregular. There comes a good season for hay and a sudden demand : foreign rakes are then sent for ; the next year every English maker produces more, the imports also arrive and there is a glut on the market. English rakes are quite as good as foreign, though not quite so smooth or neat, on account of the sort of wood of which they are made, and they are cheaper than the foreign article. To regulate the output and the demand is one of the tasks of the Association. If an order comes to one member which he cannot carry out, he is supposed to inform the Association in the hope that another member will be able to execute it. They hope in this way to meet a sudden demand from one district when there is a glut in some other, but the difficulty is that they are more often informed that

members have stocks they wish to sell than that they have orders which they cannot fill.

A piece of constructive work that the Rake-Makers' Association undertakes is the encouragement of members to introduce a costing system. The small man seldom has any idea of how much it costs him to make a rake. He is farming as well, perhaps, or has a pony and trap which he also uses for pleasure, throwing the use of it into the rake business for nothing. For all he knows he may not only be living on the farming entirely, but actually losing on rake-making.

Some of the members have been induced to go into the question of costs and keep books, so gaining a better idea of costs than before. Where they have done this there is far less likely to be trouble from underselling. The great obstacle confronting any association is the question of price. It is this that was said to be breaking up the Swill-makers' Association of Furness, and which has prevented similar unions from being formed among the hoop- and trug-makers. People who refuse to join usually do so because they will not be bound to a price.

The temptation to undersell is a strong one to a small man who has very few resources. He may suddenly need £50 very badly for his rent. Possibly he has a large stock of rakes on hand and the agreed price of the Association is 12s. a dozen while he is offered 10s. a dozen. It is very difficult for him not to accept the offer and get his £50, even though it may have cost him 11s. a dozen to make the rakes. In spite of this, only one rake-maker is reported to have under-sold after joining the Association, and he, oddly enough, was a prosperous man with no pressing need of money. The Association considers this a good record.

Minor Industries and Supplementary Crafts

Very often a supplementary craft is found in conjunction with one of the underwood industries. The most frequent of these is the making of wooden pins for fastening down thatch. In Norfolk as would be expected, since the best professional thatchers come from this county, makers of hurdles and other woodmen nearly always carry on the making of brooches or as they are sometimes called, broches, as well as their more important craft. These thatch-pegs are split and pointed, but sometimes the sharpening is left to the thatchers. The brooch is from two to two and a half

feet long, and before being put into the thatch it is given a twist in the middle, then doubled over on itself and thrust into the thatch like a hair-pin. Rods made like brooches but much longer are laid along the edge of the thatch and fastened down by the brooches in such a way as to make patterns; these rods are sometimes called roovers. Stack-pegs are also often made for thatching farm-yard stacks and out-houses. They are stouter than a brooch, and pointed at one-end. A privet is another sort of peg for thatching; it is much the same as a brooch, but round instead of being split. Cornstack brooches are another sort, four feet long, whereas the ordinary builder's brooch is but two feet. The cornstack brooches are put in straight, and string is tied from one to the other: the effect is much rougher than that of the patterns made by rods fastened down hair-pin wise by brooches on house-thatching.

The besom-makers of Yorkshire make thatch-pins from the core of the ash wood from which the laps have been cut; so do those makers in Nottinghamshire who still use ash and not cane. Thatch-pegs in the two sizes for buildings and for ricks are made by hurdle-makers and thatchers both in Dorset and Wiltshire. Here they are called spars and spicks, and are made of hazel, pointed at either end; they are also made in Huntingdonshire where there is a good deal of thatch on barns and cottages, and where they are called spits.

Other small wooden articles made as side-lines by under-wood dealers are the packing sticks made by a Kentish hoop-maker. These are small split rods two feet long used to lay cross-wise over the straw or other packing material on a box of fruit, to keep the contents from jarring in transit. They are rived and shaved like a hoop, but are much smaller. Two are used on each box.

The making of scythe-shafts, fork-stales, and broom-handles is generally carried on by rake-makers who have the steam-box necessary for softening the first and the lathes for turning the last. A special clamp is used for bending the scythe-shafts or 'sneeds'. They are then shaved with a kind of plane similar to the 'stale-engine' used by rake-makers in Warwickshire and described above (p. 124). The small handles, called 'snees' in Sussex, by which the shaft is held by the mower, are turned and fixed on.

Besides scythe-handles, fork-stales (handles for pitch-forks) are often made by rake-makers. They need to be very strong, so they are quartered, four or more stales being

split from a thick log. Being thus split along the grain they will not easily break. Fork-stales are sometimes made in factories (sawn and machine turned), but these are inferior as they break more easily. Broom-handles, however, are now more often machine turned in factories, because less strength is needed. Great numbers of these are also imported.

In one or two of the minor underwood industries wages are said to be no higher than those of agricultural labourers. This is notably so with crate-rod makers in Shropshire, and the makers of ship-fenders near Coniston. In the latter case the craft was said to take three years in the learning. In Winterslow in 1921, 7s. a thousand was the piece rate for making spicks. More detailed information comes from Norfolk. The price of a bunch of raw material for brooch wood in the woods was, in 1923, 2s., or for the half-bunch 1s. The size of the bunch is thirty long pieces of nine feet and upwards or sixty short pieces of four and a half feet and upwards, the half-bunch containing fifteen long or thirty short pieces averaging two inches in diameter. The customary size of a bunch of finished brooches is four feet long and contains a hundred split pieces. About two hundred to three hundred finished brooches can be made from a bunch of raw material, according to the size and quality of the rods.

Bunches and bundles differ in size in different districts. Near Diss, where 1s. a bunch is the regular price, the bunches may be different in size but contain approximately the same amount of wood. The bunch that is shortest in length contains two hundred brooches, a bunch three feet long has one hundred and twenty brooches, and a four-foot bunch contains ninety-five to a hundred brooches; the wage here for making was 5d. a bunch. Near Stowmarket, in Suffolk, a quarter of a thousand make one bundle, and this number can sometimes be split in an hour, with very hard work, such as cannot be done by most men. Moreover, in this district the splitting was the only part of brooch-making done by a woodman; the thatcher was left to point his own brooches.

The most outstanding feature of small underwood industries is the number of articles that may be produced by one firm. Individual men who employ no one sometimes make but one article, as for example, hoops, or oak-spelk baskets. The one instance of oak-spelk baskets not providing the sole occupation of the man who made them, was in Shropshire, where their makers go fruit picking in summer.

In other districts this work is considered so skilled that a man who once learns it gives it his whole time.

But when the business is that of a small firm a number of things may go on under the same roof. In Derbyshire, oak swills are made in the same workshop as besoms, but by men who do nothing else; in Furness, oak swills, besoms, hoops, and ship-fenders, and in Shropshire also birch-brooms and oak scuttles, are made together, and bunches of brush-wood are tied up and sent to a *vraegar* factory, all from the same workshop. Preparation and sale of firewood is frequently a part of an underwood business. The usual method of buying underwood is by auction, though an isolated man may buy by private tender. The result is that many sorts of wood come into the hands of one man, and unless he belongs to the small, one man business, it is convenient for him to make up all the kinds of underwood products for which there is a market in the neighbourhood.

In East Anglia, where brooches and hurdles are the main forms of underwood industries, these two are seldom found apart. The maker of one is nearly always the maker of the other. Not quite in every village, but at any rate within easy reach of most villages, is some man who adds to his income by dealing in wood, usually employing one or more men to make it up into hoops, hurdles, brooches, thatching-pegs, clothes-pegs, pea-sticks, and faggots. Sometimes he employs several men in making up the stuff and spends his time chiefly in buying the wood, cutting and hauling it, and in making sales. Very frequently such a man has a small-holding as well, the two industries working in very well with each other. There are a few men in East Anglia who have no other occupation than that of wood dealer, but they never specialize in the making of one thing, and often make all the articles of underwood that are customary in the neighbourhood.

In one or two districts the underwood industries are carried on in conjunction with dealing in timber. In one case a rake- and hurdle-maker, having installed a 5-h.p. oil engine to drive a circular saw, now buys timber as well as underwood and sells the former in the round or saws it up into planks and posts. In another case a small rake-making industry has developed into that of a big saw mill where turnery also is done by automatic lathes, and the rake-making has now become only a side-line, as hurdle-making is in another mill. The tendency is to eliminate hand work,

and split hurdles are no longer made by the latter firm, the kind with sawn rails being considered the only one worth troubling about. But the underwood industries are chiefly carried on by small firms, buying underwood only, generally obtaining it regularly from woods within a few miles of their yards. This proximity probably determines the location of the industry. All the work, even the sawing, is done as a rule by hand, though if gate-posts and similar things are made these may be sent to a neighbouring mill to be sawn, and one rake-maker used occasionally to take his 'rake-stales' to the mill to have the ends sawn up.

In addition to the half-dozen small rake- hurdle- and hoop-making industries of Warwickshire, there are several men who buy up underwood and sell it chiefly in the form of pea- and bean-sticks, making a few hurdles of the large poles and cutting up the poorer material for firewood.

CHAPTER VIII

MARKETS

Swills and Whiskets

THE swill is the basket in common use all over the counties of Westmorland, Cumberland, and North Lancashire. South of Preston, except for Liverpool, the large area of willow-growing and basket-making seems to supply all needs in field and house, and potato baskets are made of willow again, whereas north of Preston, swills would be used for these purposes. One small village near Kirkby Lonsdale on the east makes osier baskets, but except for this none are found again until Carlisle is reached. Besides use for domestic, agricultural, and gardening purposes, there is a large market for swills in Liverpool and Scotland, where they are used for coaling ships. If it were not for these two places, the local demand, large as it is, would not afford the market that is needed for the large group of Furness swill-makers.

The oak baskets made near Chesterfield, though much more open than those made in the Lake District, serve much the same purposes. In country districts they are used for gardening, but the greatest number go to Sheffield, where they are used, so their maker alleged, in the steel works for feeding the furnaces with coke: the basket is thrown together with the coke into the furnace, and the steel works are said to find these baskets desirable for the purpose, because all the material of which they are made will burn.

The Shropshire whisket is used extensively in that district for carrying coke, coal, potatoes, and even the family washing. They are commonly sold direct to the factory or colliery by the dozen or more, but some are sold through dealers, and it seems that the price increases rapidly before they reach the public through wholesale and retail firms. Ironmongers stock and sell the Shropshire scuttle for stable use; in feeding horses it acts as a sieve, letting through any grit, so that in this it differs from the Westmorland swill, which can be used for broadcasting seed in the fields. The Shropshire baskets travel as far afield as Whitby.

Barrel Hoops

The Furness hoopers have experienced a severe shrinkage of the markets in the last few years. Some time ago they supplied Liverpool and other seaports with hoops for fish barrels. The hoops were also used for cement barrels and for gunpowder kegs, and for any barrel for which a cheap hoop was wanted or iron was unsuitable. The only one of these markets that remains for the Furness hoops is that of the five neighbouring gunpowder works.

The wooden 'smart' hoop of the south-eastern counties is used to-day, as the northern one was some years ago, on casks that contain cement, sulphur, gunpowder, fish, and jam. Thus, the largest markets for them are Gravesend for cement, the fisheries of Yarmouth, Lowestoft, and Scotland, and the jam and other factories of London. Coopers all over the country who do dry-coopering, making up barrels and casks of many descriptions, take large quantities. The rest are sent to London merchants, who dispense them in small numbers. They are heard of again in the Potteries as 'London rods'. Woolwich takes a good many, and other places where gunpowder is made still use considerable quantities.

Some hoop-makers get in touch with one big factory and make for that and no other. This, in the opinion of one rather well-to-do maker, is a great mistake, and he thought it much better to supply several firms, making, if possible, several kinds of goods, so that when the trade in one is in any way depressed, there are chances either that it may still flourish in others, or because there are several orders, even though they are smaller than before, they may enable the maker to survive the crisis.

The hoops made in Warwickshire are supplied to firms in Birmingham, Wolverhampton, and Wednesbury, who make barrels used for packing nails and other ironware for export.

Before the War, hoops made in Shropshire were sent to the tile and pottery works at Coalport, whence goods are sent away in barrels. In a district with such a convenient market near by it seems extraordinary that the local hoop-making industry has died out.

The small craftsmen in every district find difficulty in getting a good market; they are too ignorant to attempt advertisement, and are afraid of risking what is to them a large sum by sending goods to men they do not know.

The purchaser also prefers to buy direct from a dealer he knows rather than from an unknown maker. The dealer helps to keep up the standard to the level of the best craftsmen. Moreover, he finds markets which, to those who cannot go to look for them, are always a matter of chance. Thus, the dealer performs a useful service to the trade by acting between the unknown maker and buyer, but craftsmen are an easy prey to an unscrupulous man, and are too ignorant to hold their own if prices are beaten down. A difficulty in the marketing of hoops, felt by both hooper and dealer alike, is the short time for which the rods will keep. They are made of green wood, and unless carefully stored under cover, they deteriorate in appearance, if not actually in quality.¹ The services to the trade performed in Hampshire by the dealer are rendered in Sussex and Surrey by the large hoop-merchants.

The traditional character of the hoop-making industry is reflected in the curious names of the sizes of hoops. Where a certain size has no name, it is always a hoop the demand for which has sprung up within the last twenty years. The sizes and the names differ from district to district.

<i>Hampshire.</i>	<i>Sussex and Kent.</i>		<i>Liquid measure of the cask.</i>	
Swinger	Footers	14	feet long	
Middlin'	Middlings	13	" "	
Long Pipe	Long Pipe	12	" "	
Short Pipe	Short Pipe	11	" "	
	Ten Foot	10	" "	
	Hogshead	9½	" "	54 gall.
	Nine Foot	9	" "	
	Barrel	8½	" "	36 "
Killiken	Eight Foot	8	" "	
	Kilderkin	7½	" "	18 "
Firkin	Seven Foot	7	" "	
	Firkin	6½	" "	9 "
Long Pink	Six Foot	6	" "	
	Long Pink	5½	" "	' Pin '—4½ gall.
Short Pink	Five Foot	5	" "	
	Short Pink	4½	" "	
	Tumbril	4	" "	

Bottle-hoops are used chiefly for gunpowder kegs, and in powder works are often called 'gallon' hoops.

Many of these names are those of the cask on which the

¹ There is some difference of opinion on this point. A Warwickshire maker had piles of hoops stacked up in his yard, raised from the ground on logs and well covered with shavings. He said that, thus stacked, they would keep for several years, although there was a danger that if they were kept too long the bark would come off, and this would reduce their value.

particular size of hoop is used, such as 'pipe', which is a cask containing two hogsheads, as well as hogshead, barrel, kilderkin, and firkin.

In Kent and Sussex a bundle of hoops contains a 'long hundred'. There are thirty bundles in a load, but the number in a bundle varies considerably, because men are paid for cutting by the load, therefore the load must always be as nearly as possible the same bulk, whatever the size of hoops in it. The difference is made by changing the number of hoops in a bundle.

In the Lake District, hoops are done up together in circles of seven, and seventeen circles make up the 'count' or bundle in the small hoops, which may be from three or three and a half feet to five feet in length. For small hoops the 'count' must be roughly one hundred and twenty, again known as a 'hundred', but for big hoops, which may be ten feet in length, the 'count' is only sixty.

In Warwickshire, rings (each containing six hoops) are piled up into bundles of ten to thirteen rings, according to the lengths of the strips used for making the hoops. Thus ten rings of five-foot and five-foot-six-inch hoops form a bundle, or thirteen rings of eight-foot-six-inch and nine-foot hoops. Thus all bundles contain approximately the same amount of wood, and the price of all is the same.

Crate-rods

Big ware in pottery is packed in crates whether for home trade or export. For the foreign trade all small ware goes in barrels; but for the home trade, only about a fifth or a sixth of the ware is packed thus, and all the rest, even of the small ware, is packed in crates. In the export trade, the pots packed in crates have suffered from pilfering, and therefore companies refuse to insure small pottery unless it is in closed packages. The markets for crate-rods are chiefly the Potteries.

Hurdles

Hurdle-makers generally supply local farmers over an area of not more than twelve miles radius; their chief market, therefore, is farms where sheep are kept on the arable system. In several districts, however, wider markets also exist. A man at Lacock, in Wiltshire, sends hurdles over the border of Gloucestershire, fifteen miles away, and a few even to Scotland. Another man, in Warwickshire, sends

hurdles to Ireland and various parts of England. But as a rule, hurdle-makers only supply local farmers. In many places hurdles are bought for race-courses and games. For wicker hurdles, besides the lambing yard, there is a demand in seaside places as wind screens; whilst wattle hurdles are often used on poultry farms, and would, it is said, be bought in larger numbers for this purpose if they could be obtained.

Where there are flocks of folding sheep the demand for hurdles begins in the autumn so soon as the root-crops are ready. Early in the New Year, hurdles are needed for lambing, and in some districts again at the latter end of July, when the lamb sales are held and flocks made up for the winter.

Sometimes fairly large orders are given for hurdles for use at agricultural shows; one maker was found who had an order for thirty dozen for the summer show at Buntingford, in Hertfordshire; another was making for the St. Neots show (Huntingdonshire). A man living between Rayleigh and Southend said he made between five thousand and six thousand a year for local purposes, which in this suburb of London proved to be chiefly for sports grounds.

The prices of hurdles vary considerably. Even in one county there may be great differences between villages not far apart. At Daglingworth, in Gloucestershire, 24s. a dozen or 2s. apiece was the price in 1922, but in Chedworth, about six miles away, it was 30s. a dozen at the same date. Thirty-five years ago, in the same district, hurdles were 12s. to 13s. a dozen, and during the War they rose to 50s. Stakes are provided for fixing the hurdles, and cost 2s. a dozen. They are driven in the ground and the hurdles fastened to them, two being fastened to each stake.

Again, in East Anglia, in 1923, the price was sometimes 30s. a dozen, though a more usual figure was 24s. a dozen. The life of a hurdle is from two or three years to five, or even longer, according to the treatment it receives.

Besoms

Birch is the material universally used for besoms for road and garden use, and heather for other local purposes. The steel works of Sheffield use the heather brooms, and seem to provide a good market for Midland makers. The besoms are used to sweep up steel shavings, and as some of the floors are hot and burn away the besoms quickly, they are required in large quantities. One man who has

a larger establishment for making besoms than most others, sends fifty dozen a week to Sheffield. Others supply railway companies and coal-mines; malt kilns and corn mills prefer besoms made of ling rather than heather. The Westmorland heather brooms go for shipyards and naval use to Liverpool and other places. Sometimes only the brush part is made up and sent by itself, and the buyers keep handles to which they fit each new besom.

The besom-making industry of the North Riding of Yorkshire, although supplying to a certain extent the farmers' needs, does not depend upon them, as they use a comparatively small number and seem to have taken largely to bass brooms in their place. One besom-maker who had supplied only to farmers has now given up the industry entirely. One old man at Pickering makes about nine dozen besoms a day, and many farmers on the moors produce, on an average, about seven dozen a week each. In the Middlesbrough and Hull districts there are shipyards, iron works, and other works where besoms are wanted in large quantities, but the depression in the shipbuilding and other industries on which besom-makers depend made the conditions abnormal when these makers were visited in 1922.

The market for the Essex besoms of Weeley Heath is Colchester. The broom-makers north of Norwich send all their besoms to Norwich, except the few they sell to local estates. There is a considerable demand for birch brooms among nurserymen and gardeners in the suburbs of London.

The besoms of Verwood are hawked to the neighbouring estates, and there is a good deal of hawking of besoms by the Surrey 'broom squires', some of the men going long distances with pony carts. When they get an order to deliver they take many extra brooms, which are sold by the way, and attempts are made to get orders for more. Each man is his own commercial traveller, and apparently continues the method of delivering his own brooms in order to have the opportunity of selling and getting orders on the way. One of the younger men near Hindhead hires a motor-van and takes his brooms as far as Witney and Oxford. Others rely on London and its outskirts. Besides hawking their besoms or selling them to those who hawk them together with pots and pans, the Hampshire besomers sell to seed-merchants, to the railway company, and to stables and breweries.

Rural craftsmen are often dependent on chance for finding

a market, and their want of education is frequently a handicap. One besomer and dealer who receives large cheques from various parts of the country cannot write his own name.

Charcoal

The most extensive market for charcoal from the Furness district is the steel-smelting furnace of Backbarrow. This furnace was established about 1711, when the ore used to be brought from the direction of Penrith; now it often comes from Greece and other countries, where it is quarried and not mined. It is as cheap when it enters England, in spite of the transport expenses, as English ore.

Charcoal contains no sulphur, and therefore iron and steel of the best quality, such as that used for surgical instruments, are smelted by it. Iron smelted from coke is not of such a high quality, and though it may be used for some things and is cheaper than the charcoal-smelted kind, it cannot be used as a substitute. If the Backbarrow furnace were constantly running it could use all the charcoal produced in the neighbourhood. There are times, however, when it does not use charcoal.

Other markets of the neighbourhood are the gunpowder works. Although they were originally established on account of constant supplies of charcoal within easy reach, some of them have ceased using forest-burned charcoal by reason of the price, and content themselves with that produced in a chemical works, and sometimes called 'retort' charcoal.

The largest market, apart from the smelting furnace, is provided by laundries. Charcoal is burned within the irons to keep them at an even temperature, and large quantities are used in this manner. Charcoal from the Backbarrow furnace is often sold for biscuits and drugs. It is also used for artists' crayons.

During the War, large quantities of forest-burned charcoal were used in the trenches for heating purposes.

The chief market for the charcoal from the woodlands of South Shropshire was the blast furnaces in the Black Country, where it was used for making the best iron. It is now used in the manufacture of blacking at Smethwick, and also to make moulds for casting small hardware. A wood-dealer spoke of a demand in 1921, which was difficult to meet, owing to the reluctance of the men to undertake the arduous labours of burning.

Charcoal is used in Birmingham chiefly for refining copper,

and also for smelting it. Fuel has to be mixed with the metal, and the value of charcoal is that it burns entirely away, leaving the metal clean, whereas coal or other fuel would leave an irreducible ash which would spoil the metal. Charcoal blocks are used in soldering jewellery. Other uses are for disinfecting purposes, and for poultry foods. The Wyre Forest burners and the Wrekin Chemical Company and another big distillery at Maesyewmmer, South Wales, send charcoal to Birmingham.

Charcoal is the basis of all black gunpowder, but for all the finer work, such as military and sporting powders, a large magazine burns for itself the charcoal it needs. If the charcoal is wanted for the better powders, special wood, such as dogwood from France and Germany, is bought and burned at the works; for blasting and heavy ordnance work the right kinds of wood, alder and willow, are got and burned for making powder. Occasionally, the Faversham factory buys a little ordinary charcoal, but a large establishment of this sort burns for itself the greater part of what it wants. The powder mills in the Lake District are still able to provide a market for the charcoal burned locally in the woods, but whenever explosives are manufactured on a large scale, the market for local people ends. The factory sets up a retort and burns its own charcoal.

From Midhurst, charcoal is sent to London, where it is distributed for tin-smelting and for all the other uses to which charcoal is put. In Kent it has but the one use, namely, for mixing with anthracite coal in the oasts in which the hops are dried. Burning charcoal is not considered in Kent an industry by itself, but only a part of agricultural work to be done by every man with a hop-garden.

In 1920 the price of forest-burned charcoal was £7 per ton, and a year later it had fallen by £1 or £2 per ton.

Hay-rakes

The markets for hay-rakes, especially for the smaller makers, are usually local. Often a rake-maker sends rakes into the nearest market-town and sells them from a stall in the market. From Smeeth, four miles from Ashford, they go to Ashford, Canterbury, Tonbridge, and Tunbridge Wells. A maker not far from Dorking also sends his to Sussex and Kent. The old rake-maker near Bedale takes his few rakes himself into neighbouring towns, Darlington, Richmond, Northallerton, Ripon, and Bedale, and sells them in the

market. A rake-maker in a big way who has his workshop at Askrigg sells as far north as Newcastle, and south as far as Hull, and over all the district in between. West of the moors, however, he does not go, for if he did he would be encroaching on the market of the Westmorland and Cumberland rake-makers.

Some makers have a much wider market. Near London, the production of great quantities of hay for the London stables, which is such a marked characteristic of Middlesex farming, may help to account for the existence of the industry so near the metropolis as at Uxbridge, and till recently at Bushey Heath. The maker at Uxbridge has a much wider market than is provided by the farming of Middlesex, supplying retailers all over England, even so far distant as Manchester and Sheffield.

In East Anglia some makers served the markets of Halstead, Chelmsford, and Ipswich, and one man in a very small way, near Dunmow, found a sufficient market in one ironmonger of that town. One small rake-maker in Suffolk has a very wide market for a man in so small a way. He sends supplies to Birmingham, London, and Derbyshire, and many other places. He considers the Thames valley a good market, and he studies the tastes of different counties. Worcestershire and Leicestershire like galvanized iron teeth and braces, whereas the local taste is for the split rake with no bow, all made of wood.

Rake-makers sometimes sell only in wholesale quantities. Such is the firm which supplies all the ironmongers of East Anglia, fearing, if it also sold retail, to cut across the trade of its own customers, or not wishing to be troubled with small orders. Others occasionally retail their rakes, but generally prefer the wholesale method. Although the former brings in actually more money, the farmers come and pick and choose each rake, and so the worst ones get left.

The season for selling the rakes differs slightly according to market. If they are to be sold to farmers, hay-time is the season, but if to wholesale dealers it is November; again, for selling to ironmongers, March is the best time.

The price of rakes is small in comparison with the great amount of labour spent on the making of them.¹ In Kent, in 1922, rakes were 18s. a dozen, wholesale, for rakes of twelve teeth, the price rising by 6*d.* a tooth on the dozen. Rakes of fifteen teeth would be 19s. 6*d.* a dozen. In Warwick-

¹ See pp. 123-5.

shire (in 1923) the selling price of a rake was 1s. 9d., and before the War was 9d. In East Anglia (in 1923) the ordinary price for rakes was 10d. each for the twelve-toothed hay-rake, which was the staple sort. A large firm, employing at one time eighteen workers, though in 1923 only five, turned out about two thousand dozen in a year when on full time work.

A recent source of unfair competition in prices to the rake-maker has been Government surplus stock. A customer in Essex, even as late as 1923, announced to a rake-maker that he could buy rakes for 2s. 10d. a dozen less than the sum for which the rake-maker was able to sell them.

Walking-sticks

Walking-sticks are chiefly bought by tobacconists, a few at a time, although they are sometimes sold in special shops. The cheapest kinds are sold chiefly by small tobacconists. This method of selling requires the services of travellers, constantly going from one to another of the shops. Moreover, unless a factory makes all the kinds of walking-sticks that are required, ebony, mahogany, blackthorn, &c., with all varieties of silver mountings, it is not likely to get the order. The tobacconist's position is that he cannot be bothered to split his order for English ash sticks and for foreign wood sticks between two men: it is a waste of time seeing two travellers and making extra entries in his books. One of the present manufacturers in Guildford was originally a maker of briar pipes. He only took up walking-sticks because they could be sold at the same time as the pipes. This manufacturer thinks that if all the present Surrey makers were to combine and each to specialize in one sort of stick, one in English ash, another in hunting-crops, another in umbrella handles, and another in ebony and mahogany, and so on, and the goods were to be sold by one traveller, it would effect a large economy in business organization. Nevertheless, it would mean more agreement as to what each was to make than seems possible among the number of firms now in active competition for supremacy in the market. At present, the smaller firms value very much the personal independence that they have had for a long time. The large number of commercial travellers necessary to sell walking-sticks is said to add 25 per cent. more to the cost of them than is necessary in other businesses.

Other Articles

Of the other articles made in underwood districts, ship-fenders are sent to Liverpool, either made up, or as rods to be made up there. Scythe-shafts are sold to ironmongers and to the factories which make scythe-blades. Ladders, like the scythe-shafts made by rake- or hurdle-makers, are made chiefly for local use. Clothes-pegs are hawked about by gipsies ; no matter how poor a gipsy may be, he usually has a pony, and the wife hawks the clothes-pegs and other articles which the husband makes. A common price for clothes-pegs is 4*d.* a dozen. Spicks of hazel, in Hampshire, were sold at 1*s.* 6*d.* a hundred. A trug sixteen inches long was 1*s.* 8*d.* in 1923. Trugs increase in size two inches at a time, and in price 4*d.*, till they get to twenty-six inches long at 3*s.* 4*d.* A retail price for half-bushel trugs quoted by an ironmonger of Battle was 42*s.* the dozen. They were the hand-made, and not the cheaper machine-made variety.

CHAPTER IX

CONDITIONS AND PROSPECTS

Oak-Spelk Baskets, Swills, and Whiskets

THERE is a steady demand for swills in the districts in which they are made, and the opinion of one expert is that the making of these and of hoops are the only rural industries with any future before them.

At the time of investigation the whisket trade in Shropshire was very slack. One man was idle; another employing three men besides himself was not very busy, though he had employed as many as eleven men in better times in winter. Another had one man to help, but could not keep him busy all the time. On the other hand, there seems to be a good market for the Westmorland swill in the Lake District, which might be capable of extension.

Barrel Hoops and Crate-rods

The most serious factor in the future of hoop-making is foreign competition. Two sorts of foreign hoop are used in England: the Dutch, which is made of willow, and is not to be compared with the English hoop in quality, and the French, which is made of chestnut and other underwoods, and is equal to, if not better than the English hoop. Willow is not a very good wood for hoops; it is too light and rots easily. Dutch hoops, therefore, can only be used where an inferior hoop is needed. There are certain uses for a hoop that is not strong enough to bear much weight, such as the following: a fish barrel is bound with fourteen hoops of chestnut; around the outside a piece of sacking is put, and kept in place by a willow hoop, which does not bear weight, and therefore does not have to be heavy or strong. Dutch hoops will only beat English ones for these inferior purposes. A Staffordshire firm of coopers estimated that only 30 per cent. of their barrels could have English hoops at the prices current in August 1921.

An estimate of the number of wooden 'smart' hoops used in this country just before the War was twenty millions. One man, who used some thousands of hoops, said that only

5 per cent. of what he used were English in make ; all the rest were foreign. Of these the greater number were of French chestnut, which is the only serious rival to the English hazel hoop. Chestnut is always considered to be one of the most valuable of English underwoods, and is therefore both scarce and expensive. French hoops are more *suent* and pliable than English ; hazel keeps rather better than chestnut, and this is the only advantage that the English hoop has over the French. Another reason given for the superior quality of the French hoop is the comparative rapidity of growth of French underwoods. In England, coppice is cut on the average every ten or eleven years for hoops, but in France it is said to grow quickly enough to be cut after four years' growth. This is not only an advantage in quantity of material, but it means that the rods are straighter and cleaner than the English rod. A slow grown rod is more apt to be bent or to have knots than a quick grown one.

As to cost, several reasons are given for the cheapness of the French hoop, which gives it an advantage in competition. Method of workmanship is one of them, and machinery is said to be used for some processes where hand labour is still employed in England, whilst other processes are done by women or by 'family' work. Cheapness of transport is also given as a reason for the cheapness of the hoop. One hoop-maker claims that they used to enter the country as ballast, paying almost nothing for carriage—6*d.* a ton was the price mentioned, as compared with the high charge of freights overland, 13*s.* 4*d.* a ton from Tonbridge to London. Both these are pre-war rates. With this may be compared the trade between Gravesend and Newcastle many years ago, when coasting vessels brought down coal and took back hoops.

Since the War, the very high rates of overland carriage have hit the English hoop-makers even more severely. In the spring of 1921 a bundle of English six-foot barrel hoops from Sussex cost 4*s.* 3*d.*, including 1*s.* for carriage, and a bundle of Dutch hoops cost only 1*s.* 0½*d.*, including 7*d.* carriage. English coopers can, therefore, only afford to use the English hazel hoop, which is superior in quality to the Dutch willow hoop, on the best and biggest barrel, on which they can charge a price to make up for the additional expenditure. Where it is possible, English and Dutch are used together on barrels, the English hoops taking the severest strain. Apart from the cheapness of sea-transport,

there are said to be special overland rates from a port which give an advantage to foreign goods.

Besides questions of price, another reason is given for the preference for the foreign hoops. The man mentioned above who bought some thousands of hoops a year, of which only 5 per cent. were English, considered that the English hoop was not only better but cheaper than the French one. His reason for not buying them in greater quantities was the lack of organization of the trade. If he were to buy in England all the hoops he used, he would have to spend days in finding out all the small makers and the various sizes they make, giving portions of his order to one man and portions to another. When he buys foreign hoops the traveller comes to his office, and in half an hour the order for the year is made out. In nearly all places on the Continent the selling of the hoops is in the hands of one organization, though the actual makers may be scattered as wide as they are in England.

Alterations in the methods of packing have also affected the hoop trade. The hoopers of Furness will very soon have to seek other work, if they have not already done so before these words are read. The five gunpowder factories near at hand were their chief market, but gunpowder now is far more often packed in cartridges than in kegs, and the greater part of the demand for hoops no longer exists. Similarly, cement for the home trade is now packed in sacks and not in barrels. This has affected the hoop trade of Sussex very much, and, combined with the cessation in 1922 of the export trade for which the barrel is still used, is seriously injuring the hoop trade of that district. Barrels for export trade provide the main use for the wooden hoop, and the reason why the hoop trade is in such a poor way to-day is the present pause in export trade. The packing of ships' provisions in barrels provides a big market, and more hoops are used for barrels for packing jam and sulphur and fish when sent abroad than when they travel in England.

The disadvantages of depending on one firm for a market are recognized, and some wood-dealers have suggested that hoop-makers should have alternatives when the trade is in low water, as fence-makers and charcoal-burners now have. If this were their method, they would have to sell to some central collecting and selling organization in touch with wider markets, such as is now provided by the hoop-merchants of Billingshurst and Haslemere. The benefit of this system is that the market is much surer than when the man in a little

business sells direct, as the merchant is in touch with a wider market than he can be.

Many instances of the haphazard quality of markets come to light, and markets may exist of which many hoop-makers are ignorant. Barrel-hoops are used in large quantities in the fisheries of Cornwall, and these, together with the fisheries of Yarmouth, are markets now largely supplied by the foreigner. A great deal of packing of all kinds of articles, from apples to medicine bottles, is done in barrels, and a manufactory such as the Crown Dorset Art Pottery, situated in the midst of acres of hazel, has to get its hoops from an importer at Hull, and pays carriage right across England for hoops of this material.

The men who carry on the crafts of hoop and crate-rod making, which depend on well-grown underwood, are not of a type either to demand a better standard of cultivation in their raw material or to know how to get the best markets for themselves. The lack of knowledge of their market affects uneducated men more than those who have some measure of education. Smallholders of the woodland type are often persons very difficult to deal with, and any central body that could be trusted both by makers and by buyers of hoops and rods could render invaluable service to the trade.

A satisfactory trade connexion once started is kept up with great tenacity, but in this casual marketing system there is a possibility of fraud on both sides, on the one that the goods will be faulty, on the other that the money will not be paid, and in the absence of a central body organized by the makers themselves, the dealer or merchant does a service to the trade. It is possible for a wood-dealer to refer to the secretary of the 'Crate-Makers' and Coopers' Association with inquiries as to the reputation of any crate-maker who wishes to buy from him, but there is no corresponding association among the woodlanders.

In Staffordshire the men who make crate-rods and barrel-hoops are known as 'little farmers', and their lack of education can be seen from their letters. There is more knowledge of these woodlanders among the crate-makers of the Five Towns than among the pottery manufacturers, for their own trade is a woodland craft, and if they have not come from the woodland districts into the towns in order to work near the markets, their fathers have done so. Crate-making has not yet entirely died out as a rural industry in Staffordshire, and the crate-makers of the pottery towns,

both masters and men, belong by origin to the same type of worker, half farm-labourer, half woodman, as do the North Hampshire woodlanders. The industry has gone into the towns partly because the crates are bulky and the shorter the distance they have to be moved the better. But the chief reason was that the best material to work on, which has to be sent from Shropshire or Cheshire and the southern counties, comes to the towns, and the highest wages are to be found there. In the country the earnings before the War were only about 15s. a week, and probably more precarious than the agricultural wage, but the woodlanders work hard because they value their independence, and sometimes even contrive to save enough to buy little farms or homesteads.

One of the first factors in an improvement in the position of the woodland crafts would be the cultivation by land agents or estate owners of their woodlands more specifically with regard to possible markets. It is of the greatest importance to the worker in underwood that the forester should understand the exact sizes, shapes, and kinds of material needed by the former. It is not enough for the craftsman to consider the market; it should also be the concern of the producer of the raw material.

In spite of the temporary slump in trade, and set-backs such as a bad fishing season at Yarmouth, there is a definite demand for wooden 'smart' hoops which has never yet been met by any other article. There is nothing lacking in the quality of the English hoop such as need drive it from the market, and if it is ousted by foreign competition it will be owing to the failure of hoopers to combine for their own protection. At present, in two districts, Hampshire and Surrey, the dealer or merchant is arising who will make the connecting link between the small makers and the widespread markets, but it would be to the advantage of the workers in the trade if they could perform this service for themselves by means of some central organization, and thus keep the profits which at present go to the middleman.

Split-Chestnut Fencing

Split-chestnut fencing was introduced twenty years ago. It is light in weight, quickly supplied in large quantities, and easily put up. It is durable, lasting ten to twenty years, and exactly suits the requirements of many of the suburban building schemes now going on. The solid type

of fencing required by farmers and people in the country is unnecessarily expensive for people who want to mark off one backyard or garden from another, and to keep the children from overrunning it; for this purpose chestnut fencing is very efficacious.

During the year 1922 there was a considerable boom in the making of split-chestnut fencing. Several companies had been located in the district for from ten to twenty years at Haslemere, Frant, Rainham, Penshurst, and other places, and in 1922 many new firms started; wherever woodmen were to be seen at work, they were usually splitting 'bats' for fencing.

Nearly every one engaged in the trade, especially those who have been in it for some years, thinks that the demand has a steady basis, and will always be enough to provide a fair market.

Hurdles

The demand for hurdles is dependent upon the sheep-rearing of the different districts, and a decline in this has in many districts been followed by a decline in hurdle-making. On many Dorsetshire farms arable land is being put down to grass, but at Winterslow, in Wiltshire, there are several hurdlers with a good market for their produce, while at Lacock the only hurdler still working could, he says, sell three times as many as he can make.

During the last few years the demand for hurdles in Warwickshire has decreased considerably, owing, partly, to the increased use of wire netting for folding sheep, but more to a change in the methods of farming and the kind of sheep kept. Hurdles are made in this county generally as a side-line.

When hurdles are only one of the articles made by a man, as so often happens, he treats hurdle-making merely as a means of using up waste material, and is not particularly interested in it. A builder in the extreme south of Warwickshire on the edge of the Cotswolds thinks that the hurdle-making which he carries on as a side-line could here be developed considerably, but he himself is more interested in building and does not trouble to increase the other side of the business.

In Kent, as in so many other districts, hurdle-making is part-time work, and is combined with fencing, ladder-making, and other wood crafts. Sometimes in bad weather a farmer employs his men on making spiles (or fence-stakes)

and hurdles. He often contracts for fencing, haulage, and other work of that sort. Although this sort of work was common in all the rural parts of Kent, it was not discovered in Surrey and Sussex with the exception of two hurdle-makers in East Sussex. The latter counties are much more heavily wooded than Kent, and the development of the underwoods has not been confined to local effort, but numerous fencing companies have industrialized the use of the material.

Hurdle-making in the East Midlands has undoubtedly decreased considerably within the last few years with the steady diminution of sheep farming, which in some cases culminated in the drought of 1921, when many flocks were sold. A maker in Earith, who is probably the only one to be found in the fen country of Huntingdonshire, Cambridgeshire, and the Isle of Ely, said that whereas one farmer alone formerly used enough hurdles to keep him busy making them throughout the winter, now only one farmer in all the villages round about had as many as forty sheep, and the maker did not sell a single hurdle in the 1922-3 season. In this district fruit-growing is on the increase, and sheep farming is not likely to be more extensively carried on in the near future. In Hertfordshire, on the other hand, it is said to be again on the increase, and hurdle-making here seems to have a better future. Makers in every district, however, could tell of farmers who had given up their flocks, and there is a tendency for the local hurdle-making industry to die out with the death of the present maker.

The absence of apprentices in the industry is very marked. Many workers expressed the wish that their sons might earn an easier livelihood, and they are often found to have taken up either farm work or else work in a town in preference to learning their fathers' trade. The work is undoubtedly hard, and it is impossible to make very high wages or large profits, but in certain districts it seems to be possible to make a good livelihood in this industry.

During the War hurdle-makers did not prosper. Wood was scarce and dear, and labour very dear, and the price of hurdles and by-products did not rise in proportion to increases in costs. One maker said that he continued to carry on at a loss throughout the War, even using up his savings, because he thought that the War would soon be over and it would be too risky to lose his market. But the industry has not since recovered sufficiently to repay him

for his loss. Hurdle-makers safely established in the business before 1914 still have a market, though not such a large one, but where makers have died or given up their business, no one has filled up their places. A few men have turned from hurdles to fencing, and find it, in these days of building schemes, more lucrative than the old trade.

The prospects for hurdle-making depend upon the future of arable farming. There is no substitute which competes seriously with hurdles where folding-sheep are kept. Wire netting is used by some farmers, but not to a great extent, and nets are used instead of hurdles by farmers in Yorkshire, Lincolnshire, and Nottinghamshire, where sheep-hurdles are not commonly made. Where nets and hurdles are both made, the former do not seem likely to oust the latter.

Although the craft of hurdle-making might appear to be a very simple one, yet a man must begin learning it when young, and must serve an apprenticeship in order to split the wood quickly and exactly and in the most economical way. To make the industry profitable calls for considerable ingenuity in the use of all spare material. Thus, knotty poles which cannot be split can be sold for other purposes; pea-sticks and firewood use much material which would otherwise be waste; big shavings which are cut off the split poles with the axe or draw-knife can be tied up into bundles and sold as kindling wood.

There is undoubtedly a serious shortage of skilled men in the industry at present, and this will be aggravated year by year unless the decline in arable land is stayed. In view of the difficulties that a rural craftsman must find in discovering markets outside his immediate area, a suggestion has been made that County Agricultural Committees should collect information about reliable hurdle-makers and other small craftsmen and make it available to persons who might be in need of it, such as the Fisheries Department, the Potteries, and other users of barrel-hoops and crate-rods; to ironworks, coopers, and seed merchants for besoms; and similarly to those who might be in need of hurdles. And there is little doubt that some such organization could provide a link between potential or existing supplies and potential markets.¹

Bodies such as the English Forestry Association are often asked to supply information as to where articles, particularly

¹ Some such effort is now being made (1925) by the Rural Industries Sub-Committee of the Somerset County Agricultural Committee.

wattle hurdles, can be obtained, and do very good service in the matter, but the knowledge of any such body cannot be complete, and local registers would undoubtedly be of service.

Besoms

There should be room here for team-work by the County Agricultural Committees. Besom-making is one of the many rural industries which are dying out, even in districts near to industrial centres where the besoms are used. At Awkley, west of Doncaster, there were sixteen besom-makers within living memory, and the industry flourished up to ten years ago, but although the village still wears a rural aspect, besom-making has entirely died out, killed presumably by competition.

Likewise at Pickering, on the southern edge of the Cleveland Moors, the industry seems to be a declining one. Some of the former besom-makers have given it up entirely, and others, who used to employ besom-makers, now only deal in besoms made by farmers on the moors. At present the industry is in a poor condition, owing to the depression in the shipbuilding and other besom-using industries. One maker stated that orders from shipyards had decreased 50 per cent., and one of the dealers (in October 1922) had received no orders since October 1921 from firms which formerly ordered regularly; he thought this could not be accounted for entirely by industrial depression, and that either he was being undersold or else some substitute for besoms was being used in the works. In normal times besom-making seems to have provided a fairly good livelihood, and the industry in Nottinghamshire and Derbyshire was found in a more prosperous condition. The market seemed fairly secure, but even here there was one man who reported no orders for some months. He seemed to think it was only part of the general depression of trade, and that business would return with its revival. The small number of young workers was, however, a noticeable feature, and the few old men of Darleydale and the Sheffield moors will have no one to succeed them when they die. The only really flourishing concern in this district where young workers were seen was situated a mile or two from Chesterfield; it also made oak baskets.

Gipsies make besoms among other articles for sale, and will probably continue to do so in the future. They are frequently found in Surrey and Sussex encamped on the

commons, and go up and down the country hawking their wares. Although there is not nearly so much moving from one place to another now, as some time ago, on account of compulsory schooling for children, a certain amount is still possible, and each family is apt to have a regular 'beat', up and down which it hawks the wooden articles it makes.

Even in some of the south-western counties (Wiltshire, Dorset, and Hampshire) besom-making is no longer a very prosperous industry. Many hard-working woodmen have saved enough to buy their own homes and a few acres of land, but there are very few young men to whom the life appeals; they are not interested in hand-work, and have seen local demand dwindle, so their interests and hopes turn to machinery. In Redlynch the opinion was given that before the War a man could certainly make more from wood-work than a farm labourer's wages; he would have to work hard for it, but he could do it; whether he could do so now is uncertain, even if he worked longer hours.

In certain districts where besom-making is a part-time industry, carried on by woodmen, or as bad-weather work for smallholders, it shows every sign of continuing for some time on the moderate scale on which it now exists. On the whole, its condition cannot be called a flourishing one, though from the point of view of the investigator it proved one of the most pleasant to deal with. The men who make besoms are always kindly and genial, and enjoy talking about their work.

Charcoal

The decay of charcoal-burning as a woodland industry is not due to any falling off in the use of the material. On the contrary, it is difficult to get enough charcoal to meet requirements. The great rival to charcoal burned in the woods is the product of the chemical retorts used for the distillation of wood. Several important by-products are obtained in the process which are lost when charcoal is burned in the old way, and it is difficult to claim any compensating advantages. Some chemical works make their profit on the chemicals derived from wood distillation, and they consider their charcoal as a waste product, the sale of which represents clear gain.

Nevertheless, there are certain persons who still demand forest-burned charcoal and are willing to pay the higher price for it. The steel-smelting furnace of Backbarrow prefers it, apparently for the reason that it is obtained in



THE HOVEL.



BESOM-MAKING
GYPSY WORKERS

long, unbroken sticks. Charcoal from a retort has to be handled several times, and gets broken up, and the long sticks are said to draw a better blast in the furnace.

Forest-burned charcoal has to meet competition from abroad in addition to that from the chemical retorts at home. Nearly every consumer of charcoal is of the opinion that German charcoal is the best on the market. In Shropshire, foreign competition was felt before the War, but when supplies were cut off the trade revived and was still doing well in 1922.

By 1922 the demand for gunpowder had again become commercial. The five mills of the North catered for mining interests, and so did those of Cornwall, both being engaged mainly in making blasting powder. Even the Faversham mill was making entirely for coal-mines, which create a steady and never-failing demand, though rather a slow one.

Charcoal-burning, either in the forest or in the retort, might provide the best means of utilizing the 'scrub oak' of Devon and Cornwall, which is valueless for other purposes.

In the south-western counties the Forestry Commission are acquiring land for replanting. It is hoped to replace the poor oak with quick-growing conifers, but there is difficulty in meeting the expenses of clearing, for there is no demand for the poor quality of wood in the district. But if afforestation schemes are launched, any uses that can be found for existing woods will be useful, even if they serve merely to diminish the expense of clearing. From this point of view it is worth while considering any schemes for extracting oils and acetic acid from the poorer woods, and the closing of Government acetone factories is regretted in the neighbourhood. At present the chief use of coppice is for firewood, which (in 1921) was almost a drug on the market in Exeter, while large stocks of the waste wood were still available from war-time fellings.

Rakes

The use of rakes has, of course, decreased considerably with the extended use of machinery for hay-making. A firm in Warwickshire which used to make fourteen hundred dozen rakes annually now makes about nine hundred dozen; the output of another firm in this district has fallen from about five hundred dozen to a hundred and twenty dozen.

The many necessary hand processes and the number of times

the material passes through the hands, makes the industry a costly one to the producer from the point of view of labour, and the low wages discourage boys from coming forward as learners. This is one of the industries which, like hoop-making and hurdle-making, ought to be made more attractive to boys by the introduction of power-driven saws and lathes where possible.

At Bushey Heath rake-making has had to be given up, because the high rates of wages in the district rendered unprofitable an industry in which hand-work plays such an important part. There is a certain amount of competition from factory-made rakes, some of which come from the United States of America. Others are made in England at Watford and elsewhere, but they are distinctly inferior in quality, and do not affect the country industry except when a sudden demand for rakes arises which cannot be met by the hand-made English article. Such occasions give them an entry into the market which may become dangerous.

The sale of Government surplus stock in rakes was a handicap to rake-makers for a few years. If rake-makers can keep up the present quality of their product and can regulate supply and demand by means of their Association so as to keep out the cheap article, there ought to be a secure future for this trade.

General Problems of Markets and Prospects

All the chief difficulties which face the small underwood craftsmen have their root in the problem of finding a market for their goods and maintaining their control over it. This problem is too big for the individual to grapple with by himself, but if it could be dealt with in each industry by some central organization, the worker could be left to solve questions of production for himself. The present slump in trade, and consequent lack of demand for every kind of commodity, makes the future of every small industry appear precarious. The question of the development of woodland industries can hardly be discussed until something has been done to help the existing craftsmen to solve their most pressing problems.

One of the most serious factors in the woodland industries is the very poor wages that a man in his prime can expect to get, and another is the precarious nature of the work. No boy will spend years in learning work for which he knows he will never be adequately paid. With barrel-hoops and rakes, where there is foreign competition and consequent

fluctuation in the trade, the best organization would find it impossible to keep earnings at a steady level, but in the case of besoms and hurdles this element does not occur. Farmers may beat down hurdle-makers, as they try to beat down smiths, in the effort to get back to pre-war prices, not realizing that many pre-war standards were too low, and that a return to them will kill the trade. These woodland industries have always been poorly paid and precarious, and the fact that here and there hard-working men have been able to save must not be taken as representative of the trade; the workers often have a very low standard of life, otherwise they would not find it possible to accumulate savings.

Rural industries cannot be expected to survive so long as earnings are merely on a par with the current wages of farm workers. No young man who has any enterprise will take to these trades except those here and there who value money less than the feeling of 'being their own master'. Even with the decline in the sheep population hurdles are still needed, and the farmer who grudges fair payment for the hard work involved will find himself eventually without a supply.

Another factor which increases the scarcity of apprentices in the small wood-working industries is the heaviness of the work. If the older men were less conservative in their ideas and more alive to the labour-saving advantages of the small engine for driving saws and lathes, boys might be more willing to work for them. The opinion is often expressed that the capital outlay would not be remunerative, but the cases in which power is used indicate that it can be made profitable and the industry extended at the same time, if the sawing of firewood, gate-posts, rails, and so forth is carried on in addition to the small underwood trades such as hurdle-making and rake- or hoop-making.

Sometimes this lack of demand for underwood products comes from changing markets. For instance, in Sussex and Hampshire wood used to be in demand for hop-poles. Now a permanent erection of big posts with wires crossing overhead to which string is attached, has taken the place of the lighter poles put up each year.

Supply of Underwood

Although a decline in the demand for woodland products must inevitably result in the neglect of the woods, yet it seems clear that regular attention, including drainage and repairs to roads where necessary, and replacement of old

stocks would pay in the best situated coppices on most estates. There is a difference in the period which must elapse between the cuttings, according to soil and aspect; and this also depends on the care which has been taken to replace old stools. Stools that have been pruned and cut regularly may go on for many years, it is not known by foresters how long; but stocks that are neglected deteriorate quickly. A stool needs pruning as well as cutting. Pruned after about three years' growth and again after six years, it will produce perhaps six excellent rods at fourteen years, but if left untrimmed it may bear a dozen or fifteen, of which only five will be straight. For a plantation of chestnut of eleven years' growth which had received the best care of this sort from the start, £100 an acre has been paid. But of course the care given to underwoods must depend on the demand for poles from local craftsmen, and this in turn depends on the market for finished products.

Need of Organization

The outstanding need of the small worker is to get in touch with his market, and the trade is most flourishing wherever this has been done through dealers and middlemen. But the very existence of the middleman shows that there is need for an organization by the workers which should perform the same services, and reap the same profits as have been obtained in the past by the dealer and merchant. If a trade can achieve this, it should be able to overcome the difficulty of low wages, and its ranks may once more be recruited from among the young men of the villages. The difficulty of such an organization is that it must come from the workers themselves; no central body thrust on them from outside can hope to succeed, for it will lack exactly the element which should make it of most service, the trust of both parties. Whether the workers are capable of creating the organizations they require remains to be seen. That both raw materials and markets, as well as a supply of skilled workers for these trades, can be found or created in England is a certainty, but whether they can be brought into such relation with each other as to maintain a prosperous industry is a question which cannot be answered in the light of past experience. Its solution is largely dependent upon the degree of education to which the workers will eventually be able to attain.

CHAPTER X

OAK-BARK TANNERIES

THERE are many industries which have direct connexion with woodlands and their products. Some of these are decaying and disappearing because of changes in industrial methods. These changes are sometimes caused by mechanical inventions leading to new forms of industrial and commercial organization; but they are also caused by scientific discoveries, more particularly in the sphere of industrial chemistry. In the case of tanneries both these causes have been active in the reorganization and redistribution of the industry which has occurred during the last fifty years. But, as in many other instances, the development of large-scale production in the leather trade leaves behind it individual units and marketing organizations of the older and smaller type, though they are not left intact, or uninfluenced by their larger competitors, and they are usually found to fulfil special functions and to meet special needs in the trade.

• *Geographical Distribution*

The small oak-bark tannery must at one time have been almost as ubiquitous as the saddlery- and harness- and boot-making workshops which it supplied. The factors determining its situation were, firstly, a local supply of hides; secondly, a supply of oak-bark from woods not too far distant; and, finally, a sufficient water-supply. The raw hides were usually obtained direct from the local butchers and from horse-slaughterers, and they were sold, when tanned, to the saddlers and shoemakers of the neighbouring towns. The decline in the use of horses has caused the number of saddlers to diminish, and the growing development of the industrial system tends to concentrate the making of harness in the hands of a few large firms, so that the saddlers of country towns are often only dealers and repairers. In the case of the boot-making industry the manufacture is, to an even greater extent, centralized in certain areas and carried out on a very large scale, and factory boots are retailed by small shops in even the remotest country districts. Thus the demands for leather by the

a district which is too remote to become a source of supply to other areas, it was said that skilled 'rinders' had already become scarce before the War and that the art of rinding quickly is now almost lost. Rinding is done there by farm labourers, who, since they must leave their work on the land for some weeks to do the rinding, expect to be paid for it more than the ordinary rate of agricultural wages. The system was for the wood-dealer to contract with men to rind and fell the trees, paying them 45s. out of the 50s. per ton that he received for the bark. He thus got the wood felled free of charge. A tannery which owned some coppice-wood employed men to rind it. In other districts bark is usually stripped by the estate woodmen.

The most valuable bark comes from the small branches; if the stripper is working for piece rates it does not pay him to get this off, but the merchant who understands the value of the bark will see that it is done.

Oak-bark is imported from Belgium, but it is generally considered inferior to the English product, although one tanner declared that it was to be preferred, as it contains 16 per cent. of tannin to the 12 per cent. found in English bark. The English bark, however, gives a better colour on the grain-side of the leather. Belgian bark is imported ready chopped, whereas the English bark is not always prepared in this way by the seller. The price of Belgian bark was £6 10s. a ton in London in 1923.

All tans other than oak-bark are produced abroad, and consist of gums or other vegetable extracts or mineral products. They come from Germany, Belgium, Africa, America, and elsewhere, generally in the form of extracts, and packed in barrels. They are thus more easily transported and dealt with than is oak-bark. The process of tanning by means of any of these or by combinations of tans is quicker than by the use of oak-bark only, and they are used exclusively by some of the large tanneries. Others, both large and small, make some use of them to hasten the process of oak-bark tanning and for their special effects on the colour or texture of the leather. One small tannery was using oak-bark and foreign extracts in the proportion of 3 to 1. The materials most commonly used by the small oak-bark tanneries are: Gambier, made from the leaves of an East Indian shrub, which helps to soften the hides, but tends to make them spongy and easily stretchable. Valonia, the large acorn cup of a species of oak which grows round the Levant. It hardens the leather and is

added to the weaker oak-bark liquor used in a later stage of the tanning process, in the proportion of one-tenth of the total. Sumach extract, from Smyrna, prepared from the leaf of the shrub. It is used in the oak-bark process for its effect upon the colour of the leather. Chrome-tanning, a chemical process in which minerals are used. Chrome-tanned leather is waterproof, but, being less pliable than other kinds, and also allowing of no ventilation, is less comfortable for wear as shoe-leather.

Hides

Hides may be collected from local butchers, this method being adopted by small tanneries in various places. More often, however, a fell-monger buys the hides from the butchers, and sells them to tanners, either direct or through a hide market. These latter are held in some of the larger towns, and tanneries which supply a special market can satisfy their needs best by these means, as the hides are sorted before they are sold in the market.

Processes and Tools

In many of the old-fashioned tanneries the raw hides go through the complete series of processes necessary to convert them into leather ready for the boot- or harness-maker to work upon, although where the industry is carried out on a larger scale and on industrialized lines, it is differentiated into the three sections of fell-mongering, tanning, and currying. Buildings are needed for the currying processes, and there must be lofts in which the hides may be dried, but the tan-pits may be in the open air. The number of pits in the tan-yards are many, but the use of improved methods, and the addition of gambier to the oak-bark solution to hasten the process, tends to the use of fewer pits, only about ten of the thirty available being ordinarily in use now in the smallest tannery visited. The tanks are lined with brick, or with slabs of slate (as was the case in the West Riding of Yorkshire, where the slate came from local quarries), or with oak.

The process of oak-bark tanning takes from four to twelve months, according to the method used and the hides to be treated. Calf-skins can be tanned in four months, 'mediums' in from six to eight months, 'split mediums' in four months, casing leathers (for trunks, &c.) in eight months, leather for boot-uppers in eight months, sole leather and other 'best'

varieties in twelve months. Currying takes two months. The longer the time needed for tanning, the greater the number of pits required. Tanning with foreign extracts can be completed in a period ranging from six weeks to four months.

The first thing to be done to a raw hide is to remove the hair and 'face'. The former is achieved by soaking in the 'lime-pit' for two weeks, which causes the pores of the skin to open and the hair to drop out. There are usually from one to three lime-pits in use. The hides are then steeped in the 'bait', a solution of scrapings from the hen-house, for a week. This process takes place in the beam-house, and is the only part of the tanning which is done under cover. The hides are then 'fleshed', that is to say, the flesh is scraped off with a knife. Fleshing is highly skilled work, as one cut with the knife in the wrong way may mark the hide and seriously impair its value.

When the hides have been fleshed the tanning process begins, in which the hides are steeped in oak-bark liquor. This liquor is formed by pouring cold water on to ground bark and leaving it to stand for a few days. The liquor which results is then pumped on to fresh bark and again allowed to stand, the process being repeated several times until the desired strength is obtained. The hides pass through a number of pits, containing liquor of different strengths, and if a new oak-bark tannery is to be started, or an old one reopened, the preparation of the liquor will occupy several months before tanning can be begun. In tan-pits which were disused for several years during the War, the strength of the liquor in the pits dropped from 48 per cent. of tannin to 20 per cent., and it took four months to bring it up to normal strength again. When the hides are steeped in the liquor they absorb a proportion of the tannin, and after they have been removed the solution must be pumped back into the 'leaches', the pits in which it is made, and more bark added. The bark can be used several times. According to the percentage of tannin in the liquor when it comes off the bark, the tanner judges whether the bark can be used again or is exhausted and must be thrown away. It is impossible to extract the total amount of tannin contained in the bark, about 3 per cent. being wasted.

The first part of the tanning process takes place in the 'handlers', six or more pits containing oak-bark liquor of different strengths, to which gambier may be added to hasten

the process. At this stage the hides are 'hungry and thirsty' for tannin, and absorb more of it than in the later stages. Thus, certain hides will be half tanned in three months, but not fully tanned until they have been treated for a year. When gambier is used, six weeks may be spent in the handlers, the hides being moved from one pit to another.

During the second part of the process the hides are 'laid away,' in the 'lay-pits', the old method being to leave them in the same liquor for six months. In this way a greater number of pits were kept in use. It is now generally considered better to pump the spent liquor back into the leaches after six weeks and steep the hides in a fresh solution. By this method the same number of hides can now be tanned in eighteen weeks, with the use of ten pits, as were formerly tanned in six months with the use of thirty pits.

The hides sometimes pass through another process in pits known as 'dusters', in which they are spread with layers of dry bark-powder between.

When the tanning is complete the hides are hung up in the sheds to dry, and when dry they are rolled. The rolling is a very important process, and it is done with an implement rather like a garden roller in construction, but smaller, and yet of such weight that a man can barely push it slowly over the hide. In one of the tanneries in the south-western district, this operation is done by machinery. Rolling gives the leather softness and pliancy.

The currying of the hides now takes place. They are cut up, and the different parts are treated according to the purpose for which they are to be used. The processes, however, are the same in general outline for all kinds of oak-bark tanned leather. First the 'bloom', which is characteristic of oak-bark tanning only, and any dirt, must be scoured out by means of 'slickers', pieces of stone, slate, or pumice, set in wooden handles, and brushes. The skins may then be treated with sumach to give them a good colour and pliability, and must afterwards be dried. When half dry the hides are shaved on the flesh side, or 'flatted', a thin shaving being taken off all over the hide to give it a smooth surface. The hide is laid over the 'shaving-beam', a substantial post, behind which the worker stands, leaning forward over the hide and shaving it with a knife. When this process is done by machinery the fibres are apt to be torn, and, although this damage may only be visible to the practised eye, it depreciates the value of the hide.

The hide is next stretched out and 'glassed' on the grain-side to give it a smooth surface, and it is then treated with cod-liver oil and tallow on the flesh-side, dried, stained, and greased on the grain-side, dried again, and the grease finally cleaned off. Hides for shoe-leather lie for six or seven weeks covered with dubbin, to render them water-proof, and are afterwards painted with oil and vegetable black.

Sometimes the hide is split, before tanning, into two thin pieces which are tanned separately, taking only half the time to tan that the whole hide takes. The splitting can be done by machinery, but a skilled man must manipulate it, for the leather may be injured if it is roughly pulled and the fibres torn. The 'flesh-split', or flesh-side of the split hide, is not of much value, but can be used for the uppers of cheap boots. The other half, or 'grain-split', is the more valuable part.

An engine is generally used to drive machinery for grinding the bark, and if the business of a fell-monger is also carried on there will be a bone-crushing machine. All the other processes are usually carried out by hand in the small tannery. In some of the rural tanneries water-power is utilized to drive the machinery.

Sheep-pelts are cured in lime-washes for use as wash-leathers, &c. The wool is pulled out, dried, sorted into 'locks', 'hogs' wool', 'lambs' wool', and other categories, and sold to Bradford wool-merchants. Sheep-skins may also be cured, with the wool on, for rugs. One tanner treats some of them in oak-bark liquor, which turns them brown. Horse-hides are cured and sold as 'white hides', i. e. untanned, to saddlers, for whip thongs and laces. Pig-skins are treated with chemicals before being sold to the special tanneries which deal with them.

Tanning of Nets

At Yarmouth, the tanning of drift-nets is a local industry. The nets come to the tannery as 'lint', i. e. white, and are tanned three times and dried. Trawl-nets are tarred and not tanned. Oak-bark was formerly used for tanning nets, but it has been superseded by an imported tan. This is cutch, or catechu, which is made from the heart-wood of certain East Indian trees, such as the betel-nut tree, and is imported from Burma. The nets are put into a boiling solution of cutch, where they remain for one or two days.

The fishermen often dye their jumpers and slops in the same vats. Mackerel nets are cured with oil, dried, and afterwards tanned. This process gives them the hardness and strength of wire.

Labour

The training for a tanner or currier takes five years. In the small rural tanneries each man is usually skilled to 'take a job right through', either as tanner or currier, that is to say, he understands and can carry out all the processes of either craft. In the larger tanneries on factory lines, where more machinery is used and quicker methods are employed, the men are skilled in only one process. Much of the work of currying requires a great deal of skill; in tanning the processes require less manual dexterity, but the tanner needs to have the judgement which can only be acquired by experience.

Types of Organization

It has already been pointed out that the three processes of fell-mongering, tanning, and currying may all be carried out by one of the small rural tanneries, and the two last processes, in particular, are very often undertaken by the same firm, though in some cases only the tanning is done, the tanned hides being sold to a currier. There was also another type of old-fashioned curriery industry in which tanned hides were bought from the big factories of Bolton or London, where they had been prepared by the methods of 'mixed tanning'; they were then curried and the leather retailed to local shoemakers. Few of these firms are now to be found in country districts, and where they exist, the industry is conducted on factory lines. The rural tannery was at one time often found as an adjunct to a farm, especially a stock-farm. In this case the most economical use could be made of certain by-products for purposes of manure. Another case in which the scope of a firm includes other activities besides tanning is that of a tannery in Cornwall which has recently acquired an area of oak coppice in order to make sure of a supply of oak-bark for the tan-pits.

The number of men employed in oak-bark tanneries, as compared with those needed in a large tannery where mixed tanning is done with the aid of machinery, is very large in proportion to the amount of leather produced. A tannery in Gloucestershire, which formerly used the oak-bark method,

employed twenty men at that time, but when the use of foreign extracts was introduced, the number of employees was reduced to five or six. A factory-scale tannery of comparatively small size employs 50 men and produces 1,000 finished skins weekly, the complete process of tanning each hide occupying only one week. A small oak-bark tannery in which only two men are engaged turns out a dozen finished hides weekly, using 15 to 20 tons of oak-bark per annum. One of the largest rural oak-bark tanneries in East Anglia produces 200 finished hides weekly, and a Lincolnshire tannery, which is at present closed, formerly produced about £4,000 worth of leather annually, which represented some thousands of hides. Owing to the length of the process, the small tannery which finishes a dozen hides each week must have from 350 to 400 hides always in hand, whereas the factory can turn out 1,000 hides weekly, having in hand only twice its weekly output. The turnover of the small firm may not even be an annual one, as for the very best kind of leather the tanning process alone takes twelve months when done with oak-bark only. Thus, very heavy capitalization would be needed to enable a big factory to undertake this slow process.

An important feature of the organizations connected with the tanning industry is the research work done by them. The Federation of Leather-dressing Trades has a research department for discovering the best processes of tanning. The Hide Improvement Association, an employers' organization, also studies scientific questions, one which engages much of their attention being, the problem of how to deal with the flies and insects which attack the living animal and do so much harm to the hides.

Markets

Oak-bark tanned leather, being superior in suppleness and durability to all other kinds, is in steady demand by certain firms manufacturing leather goods of the best quality. Boots for country wear, both by men and women, harness and saddlery, and portmanteaux and other travelling cases are made from this leather. A certain London firm which makes harness for the British Army in India, and exports leather to that country and elsewhere, takes most of the output of one oak-bark tannery. Quantities of English leather used to be exported to France and Germany, but the prices are now prohibitive for these buyers, and

continental manufacturers are likely to capture this particular branch of the English trade. There are, however, numerous buyers in England. Boot-making firms in London and Northamptonshire use a considerable quantity of oak-bark tanned leather, and there is a certain demand for it by the best 'retail bespoke' shoemakers and other small makers, especially in country districts. Some of these buy direct from the tanneries and others through agents. Large London firms buy for saddlery and harness and for travelling cases. Small country firms of saddlers and harness-makers also buy direct from tanneries, but unless the tanner has a regular contract with certain firms it is better for him to sell his output to a dealer. This may not always apply to tanneries specializing in certain types of leather.

There are various by-products from a tannery, and nearly all of them can be profitably used or disposed of.

From the process of 'liming', or dressing with lime, two kinds of fertilizer are produced. Lime-bottom is the sediment from the chemical vats of a leather-dresser, and contains lime, sodium sulphide, ammonia, and bits of hair and animal matter; it is used by farmers on grass land. Scutch, another sediment from the lime-pits, contains nitrogen (3 per cent.), lime (15 per cent.), phosphates (2 to 3 per cent.), and animal matter; it is prized in Kent for the hop-fields. The flesh scraped off the hides during the preliminary process may be made into glue by the tanner or sold to glue manufacturers. From the scrapings, another by-product is a preparation for 'sizing', i.e. putting the gloss on paper, which is sold to English and American paper-mills. The shavings which are taken off the leather in the currying process are used in the smelting of iron, but tanners cannot dispose of all of them for this purpose, and a considerable quantity is burnt. Bark which has been used in the pits until it is exhausted, may be sold to riding-schools.

Oak-bark tanned leather is more expensive than other varieties, owing to the greater amount of time and labour spent on its production. There is little discernible difference between new leather which has been tanned by the oak-bark method and that treated with other substances; even leather buyers cannot always recognize the difference, and there is said to be a great deal of substitution of one for the other. Oak-bark tanned leather is lighter than other kinds, and so, since leather is sold by weight, the price of the former must be higher than that of the latter by an even greater margin than that needed to make up

for the extra cost of time and labour, if the oak-bark tanner is to make equivalent profits.

His most serious competitors in the market are probably the tanneries which use a mixture of oak-bark and foreign tanning preparations, for the consequent shortening of the process of tanning gives them quicker returns, and they are able to compete in buying oak-bark, and thus, when it is scarce, causing the price of it to rise. Increases in the price of bark affect the tanner who depends upon oak-bark solely more than the tanner who uses the mixed process.

Germany and Austria have recently made great strides in the development of their tanneries, and the prospects of a foreign market for English leather are probably declining, but the most important markets for the oak-bark tanner are the home industries of bootmaking and saddlery. The decrease in the use of farm and carriage horses and in the number of cavalry regiments has affected the industry, but serviceable boots are always a necessity. Many of the old country tanneries have been closed down within the last twenty years, but those which remain, some of which have been established for one or even two centuries, seem likely to survive for many years to come. The mixed tanneries and those using only foreign extracts are more profitably worked in industrial districts, so long as there is a suitable water-supply, obtaining their hides from the large markets and their tans and the fuel for their machinery by means of the greater transport facilities of these localities. But it has been shown that the oak-bark method is more easily carried on by small firms, and the old-established plant which these possess is of considerable value. Small rural tanneries are seldom converted into large factories: this, however, has been done in one case in Gloucestershire, where some of the old pits are used for the new processes, and the owner considers that the original plant made a good basis for the new. He stated that less capital outlay had been necessary on essences than on bark, and the quick returns made the business a profitable one. But in the more modern tanneries, vats and drums, in which the hides can be stirred or revolved, are generally used instead of pits, and the installation of a quantity of machinery is necessary. Much of the value of the oak-bark method, however, consists in the carrying out of the processes by hand, and the industry does not seem capable of any very striking development by the introduction of machinery. But although no elaborate machinery is required, consider-

able space is needed for the tan-yard, the sheds in which the currying processes are carried on, and the drying lofts ; and the time needed to prepare the liquor and the length of the tanning process all contribute to make the starting of a new oak-bark tannery an expensive venture. Oak-bark tanning being carried out on a comparatively small scale, the number of men employed is small, and local supplies of hides and local buyers of leather, whilst not likely to provide the sole source of supply of raw materials, and outlet for finished products, are yet important factors. Oak-bark tanning is thus eminently suited to be a rural industry, and so it is likely to remain.

The recent reopening of an oak-bark tannery in Norfolk and the intention of the owner of another, in Lincolnshire, to restart tanning, are evidence of the feeling that there is a future for the industry. The business of the former firm is being developed on rather new lines, specializing in the tanning or dressing of all kinds of skins for individual orders and for handicraft workers. In the latter case it is believed that a good market for the finished products could be obtained amongst local saddlers.

Imports of Bark for Tanning

<i>Year.</i>	<i>Quantities.</i>
1905	563,604 cwts.
1906	336,479 „
1907	477,662 „
1908	466,613 „
1909	549,438 „
1910	560,038 „
1911	650,834 „
1912	572,901 „
1913	892,054 „
1914	846,276 „
1915	761,623 „
1916	572,891 „
1917	415,737 „
1918	712,190 „
1919	494,051 „

Imports of other Tanning Stuffs

	QUANTITIES.		
	<i>Tons.</i>		
	1905.	1913.	1919.
Cutch and gambier	10,325	7,725	7,928
Sumach	11,246	8,205	3,482
Valonia	25,652	17,305	6,718

PART II. SOME VILLAGE WORKSHOPS

INTRODUCTION

AMONG the chief craftsmen in the primitive self-supporting village would be found the wheelwright, the blacksmith, and the saddler, all supplying the needs of the agricultural population. Carpenters and bootmakers, working for the whole population, were also essential members of the village community of moderate size, and the rope-walk must at one time have been almost as common as the wheelwright's shop. The craftsman who built and repaired the farm carts and wagons, the one who not only shod horses but also made the ploughs and harrows and the latches and hinges for the gates and doors, and he who made the harness both for the cart and carriage horse, these three still survive to some extent, and the two former, at least, are still essential to the farmer. Much of the business of building carts and wagons, however, is now carried on by big town firms, and the village wheelwright's shop has often dwindled from its high position as the working-place of a group of some of the most highly skilled craftsmen of the country-side to a mere repair shop. The same is true to an even greater extent of the smithies, for a great number of blacksmiths now do little but provide horses with ready-made shoes. Very few saddlers have survived in villages, and the chief business of those who are still to be found in market towns is, in many cases, that of selling factory-made harness and executing minor repairs.

The carpenter is still a ubiquitous figure, most frequently as a 'jobbing man', often attached to a building or timber-yard or combining his business with that of a wheelwright. The country carpenter's trade differs little from that of his fellow workman in the town; it is long since he was a user of locally grown raw material to any considerable extent, and there does not seem to be any particular opening for further development of this trade on characteristically rural lines.

Bootmakers have been overwhelmed more completely than any other village craftsmen except perhaps the saddlers, by factory competition. Both boots and harness, of uniform pattern, can be manufactured cheaply in great quantities and distributed through shops. The only task left for a village workman is to repair these factory products

from time to time. There are still a few village bootmakers, some of them highly skilled craftsmen and good judges of leather, who are able to survive through having earned the reputation for making good, strong boots for country wear, using the durable and supple oak-bark tanned leather. But there is little direct connexion between the village bootmaker and the small rural oak-bark tannery, although the only chance of survival for the former as a maker rather than a mere 'cobbler' or repairer seems to lie in his ability to procure the best material on which to exercise his craftsmanship—material which is obtainable from these small tanneries. It is often a very difficult matter to obtain the leather which is tanned by oak-bark through dealers, particularly since it may be, when new, indistinguishable from an inferior kind.

Rope-walks are sometimes spoken of as if they were only a picturesque feature, now extinct, of the village of the past. As a matter of fact it is estimated that there are about three hundred small rope-walks in villages and small country towns, and although the bulk of material—ropes, nets, and halters—produced by them is small compared with the output of the numerous factories, yet it does not seem likely that the hand-roper will be entirely superseded by the machine for some time to come.

In the following sections the positions of the rural industries of wheelwrighting, smithing, saddlery, and roping is described and some estimate is attempted of their future prospects, the conclusions which can be drawn being that there seem to be possibilities of further development for wheelwrighting and smithing and of survival for a long time to come of the small rope-walk and of a small number of country saddleries.

In all these trades the greatest current need is that of extended facilities for, and improved methods of, training both for learners and practising craftsmen. Everywhere the system of apprenticeship has broken down and learners are scarce. Even if prospective learners were available the old system of apprenticeship would entail waste of time and earning power. Improved methods of training now practised by capable instructors enable youths to learn the important elements of a trade in a comparatively short time, and with experience in the shops they can learn their trades thoroughly in a period much shorter than the traditional five or seven years; in most rural districts there are craftsmen and learners by whom extended facilities for training would be appreciated.

CHAPTER I

THE WHEELWRIGHT'S SHOP

THE wheelwright's shop is an important institution in nearly every town and in many villages of the country-side. In many cases, however, it is now only a repair shop. One of the influences which has tended to bring about this change is what has been called 'the coming of the Iron Age',¹ namely, the increasing use during the nineteenth century of iron in the building of a wagon, so that the wheelwright became more dependent on the smithy. Another factor which caused a great change in wheelwrighting was the introduction of power, for when power-driven saws became common the expensive and laborious method of sawing up timber by hand was superseded and the old saw-pits went out of use. If a wheelwright could not afford to instal a power-driven saw of his own, or was not sufficiently enterprising to do so, he must take to buying planks from a mill instead of buying standing timber, as heretofore. In some cases the wheelwright buys from the mill a whole tree sawn into planks, or he may even continue to buy timber in the round and cart it to the mill to be sawn. In Shropshire, where, in the hilly districts, the wheelwrights' shops are small and scattered, timber may be sent as far as twenty miles to be sawn. In such cases it seems obvious that a little enterprise expended in setting up a power saw would well repay any one who had enough capital to do so.

With the increase of industrialism, the development of machinery and improved means of transport for goods, big saw-mills and turneries have taken up the manufacture of wagon parts, such as hubs, spokes, shafts, and felloes, in wholesale quantities. In a few cases a wheelwright has taken over a smithy, installed power-driven saws and lathe, and still buys a few trees at a time from local estates and builds carts and wagons from start to finish, from the felling of the tree to the last coat of paint. But many others now obtain sawn wood and ready-made parts from mills, and the only work done in their yards is overhauling, repairing and replacing of worn-out parts, and repainting.

A change in the type of vehicles used has also helped to drive the wagon-building industry into the hands of big firms in the towns in cases where the village wheelwright

¹ See George Sturt, *The Wheelwright's Shop*.

failed to keep pace with the times. The types of farm cart and wagon in use in each district had probably changed very little in the course of hundreds of years until the middle of the nineteenth century. A report of the Board of Agriculture issued in 1796¹ describes a special type of heavy wagon in general use in Norfolk, known as the hermaphrodite, to which two light wheels could be added for certain purposes. This same wagon is still to be seen in Norfolk and in Lincolnshire, although it is seldom actually used now, owing to its cumbrousness, and probably no more are being built.

Heavy wagons were the kind most in use when country roads were very bad, but with improved roads and transport facilities, and as the village became less self-supporting, light delivery vans (with springs, brakes, and lighter wheels), carts, and floats, came into popularity, both for farmers and tradesmen. The use of flat drays in place of wagons, especially by market-gardeners and fruit-growers, is increasing. In the fen country wagons are now only used on a few of the biggest farms, and there is often only one in a village.

There are various types of carts or wagons, suited to particular local needs. Thus tumbrils in Norfolk are built with wheels $3\frac{1}{2}$ feet high, the tallness of the cart being an advantage in tipping it; but in the hilly country of Devonshire smaller wheels are more convenient on the steep roads, so here they are made only 2 feet high. The village wheelwright has an advantage over the big town firm in that he knows exactly what variations from type are required to meet the particular needs of the locality, whereas the tendency of the wholesale manufacturing firm is always to standardize the pattern.

When ready-made wagon-parts are bought from a saw-mill or turnery these are not necessarily of English wood; in the old-fashioned self-contained wheelwright's shop there was nothing but English timber, and the craftsman, who himself stacked up the freshly sawn wood and took count of the years until it should be ready for use, knew that it was well seasoned. In a wheelwright's shop in Yorkshire a pile of roughly hewn blocks were seen stacked up ready to be turned for naves; each one was dated and some were as much as twelve or thirteen years old. Two or three years

¹ 'A General View of the Agriculture of the County of Norfolk, with observations on the means of its improvement, drawn up for the consideration of the Board of Agriculture and Internal Improvement by Nathaniel Kent of Fulham, Middlesex,' 1796.

is the minimum time for which the wood for wagons should be seasoned, according to the old craftsman's rule. When a wheelwright has to go to a saw-mill for wood he may be tempted to buy deal, instead of the more expensive English timber, for the bottom boards of carts; and although he may buy timber that is said to be well seasoned, he cannot always be sure that such is the case. The use of reliable material helps to account for the way in which the old wagons stood the wear of many years. In Lincolnshire, immense wagons which, with the curve of the sides sweeping up to the front, are reminiscent of high-prowed galleons, may still be seen with the date, proudly inscribed amongst scrolls of yellow paint, showing them to have been built in the sixties or seventies.

The general opinion seems to be that most farmers prefer to buy their carts and wagons from the local wheelwright if he can build what is required, but in the more industrial districts the competition from the big works is severely felt in the villages, even where the wheelwrights are enterprising and have all the facilities for building. One in a Cambridge-shire village had only built one cart since he was demobilized in 1919. In Shropshire the village workshops suffered from the competition of carriage-builders in Rugby and Northampton. In Dorset, Devon, and Cornwall the hilly character of the country and its rural nature keep the small workshops alive and the villages to a large extent self-supporting. In the Midlands, where there are many industrial towns and good transport, little but repairing is done by the village wheelwrights.

But that there is scope for the development of the wheelwright's shop is shown in several ways. A Tavistock firm, helped by a supply of water-power and the fact that the town is a market and transport centre, has established a wide connexion. Several firms in Rutland and Derbyshire have extended the scope of their activities. In Cambridge-shire a village wheelwright who undertook a great deal of timber felling during the War, which brought him considerable profits, installed power saws and lathes and a forge and can keep ten men busy in good times on work for farmers and tradesmen within an area of no more than five miles' radius. The work done includes a few repairs to agricultural machinery and some general carpentry. With the installation of power many wheelwrights have developed to a considerable extent the sawing of timber for general purposes of the neighbourhood, and have taken up as

side-lines some of the minor activities of a timber-yard, such as the making up of sawn and split fencing, gates, and hurdles, and even coffins. If any use is made of foreign wood, then the making of chicken-houses, feeding-troughs and racks, dry feeders for pigs, wheelbarrows, and other work often follows.

The wheelwright's yard must be stocked with a variety of timbers.¹ Ash, which is essential for shafts and felloes and may also be used for wheel-spokes, takes an important place; oak is needed for the best wagon bodies and some spokes may be made from it; the naves of wheels are always cut from elm, which is also used for other parts; sycamore and birch, and occasionally larch, are utilized to a lesser extent. The imported wheel-spokes, cleft and shaved abroad, are made from foreign oak, usually Russian.

Machinery

As regards the equipment of the wheelwright's shop, power-driven machinery is necessary if any work is to be done beyond that of the simplest repairs. A certain firm in Yorkshire may be taken as fairly typical of the old-fashioned village wheelwright who plies his trade in accordance with the best traditions of his forefathers, but with the help of modern machinery for the saving of unnecessary labour. In this shop all the processes of cart and wagon building are carried out. There is a spacious yard for the timber, and open sheds in which to store the boards and blocks for seasoning: a smithy, a big cross-cut saw, and, in the workshop, a small circular saw, a band-saw and lathe; all these are power-driven, but there are also a hand-morticing machine and a kind of mangle for bending tyres. A wheelwright's shop seen in the Yorkshire Dales was dependent entirely on water-power, of which the streams of this district are a fairly reliable source. The wheelwright who buys ready-made parts and sawn timber, or a few trees at a time which he carts to a mill to be sawn, only needs a small engine to drive a band-saw, and depends, as so many do, on local smiths and turners for supplementary work. In addition to the actual putting together of the wagon, the work of the complete wheelwright includes smithing, cutting up timber and cutting out shafts, felloes, and other parts with the band-saw, and also the turning of hubs, the riving of spokes, and other skilled hand-work. Spokes which are made in mills are often sawn instead of rived and although

¹ See above, chap. ii.

the mill-owner will explain that 'if the grain is straight it will not be cut much in the sawing', yet a sawn spoke can never have the certain strength of a rived one, for the grain of wood never runs in a dead straight line and the saw is therefore bound to cut across it in some degree.

A wheelwright situated near a saw-mill, who can thus get his sawing done easily, and can also obtain ready-made parts, often thinks that it would not pay him to install power-driven machinery; it also frequently occurs that he sees its advantages but cannot afford the outlay upon it, or is, in some cases, not sufficiently educated to understand its use. If his shop is remote from any saw-mill the necessity for a power-driven saw is more obvious, especially if he has a far-reaching business and enough work to keep it busy. Visits to wheelwrights' shops have led to the conclusion that the installation of power-driven machinery in them is generally a profitable undertaking, and that if the wheelwright has enterprise and a lively intelligence it enables him to develop the scope of his business and to compete more successfully with the big town firms of cart and wagon builders.

In one wheelwright's shop an ingenious pulley and rail apparatus, erected on stout oak beams, was seen, by which one man can move the large logs from any part of the yard to the saw. This kind of simple labour-saving device is of the greatest value in a small industry.

Labour

There is considerable difficulty in getting lads to apprentice to the wheelwrighting industry. This is the case in a great many rural industries, and particularly where they are found in or on the borders of the mining or industrial districts. The hard manual labour, which is inseparable from an industry in which hand-work still plays and must continue to play an important part, is also a deterrent. Office life and many kinds of factory work seem easy in comparison with the work of a wheelwright's yard, and boys fail to take into account the comparatively greater mental and nervous strain of the lighter work. There is a great need in the wheelwrighting industry, as in other village workshops, for the best type of young workers, intelligent, enterprising, and keenly interested both in hand-work and in the use of machinery, understanding the part which each must play.

As in many other rural industries the son has in the past

frequently been brought up to his father's trade and, unless the boy shows marked ability for some other work, there are many advantages in this system. For example, the understanding of the properties of the different kinds of wood (which is an essential characteristic of a good wheelwright), the ability to judge the quality of the timber in a standing tree, the imagination which can see, as the timber lies in the yard, that from this piece a shaft can be cut, from that a felloe, turning the natural vagaries of the grain to the workman's best advantage—all these qualities come only from long experience and familiarity with wood-working from a boy's earliest years. The master craftsman is still a familiar figure in the small wheelwright's shop, and his son should have the advantage of much knowledge absorbed almost unconsciously. Yet too often, the wheelwright, having seen his business decay through his own failure to adapt himself to changing conditions, has the poorest opinion of its future possibilities and is the last man to apprentice his son to his own trade.

In 1921 it was stated that, whilst a boy learning his trade in the wheelwright's shop might receive 14s. a week, boys who worked down in the mines would, after a short time, be earning as much as their fathers. A man of only forty-nine described the apprenticeship of his youth in terms which seemed applicable to a much more remote time. At the age of fourteen he went to live in the house of a master wheelwright, who found him in food and clothes and, when his work was good, gave him 2s. 6d. or even 5s. to spend at Fair-time. The food was good, because he ate at the master's table; the hours worked, however, were from 6 a.m. to 6 p.m. in summer and winter, whereas the modern working day is sometimes only from 8.30 a.m. to 4 p.m. The success of such an arrangement was dependent on the personalities of master and 'prentice, and was variable to any extent within the limits of the height and depth to which human nature can reach.

Piece rates are sometimes paid in wheelwrights' yards. An employer who has shown considerable enterprise in the development of a motor-body building business said that he found piece rates preferable, and that he could get a high standard of output by paying his men well for quick work. The earnings vary according to the work on hand:

Wheelwrights often have some subsidiary employment, such as the occupation of land or inn-keeping, especially if the wheelwrighting business consists only of repairing. The ramifications of organization in this industry are far-reaching

and include almost every branch of work for making or repairing wooden things in everyday use in the village, from the cattle-byre to the coffin, and even some industries dealing with materials other than wood.

The village wheelwright is often a carpenter and joiner as well. Coffin-making is said to be light work and a lucrative side-line. Some wheelwrights have taken up the making of tool-handles. Those who have smithies sometimes do repairs to farm implements. One industry of this kind in a rural district keeps ten men employed on work only for the immediate neighbourhood. Again, wheelwrighting is sometimes a branch of a general business which includes building and decorating, or a saw-mill. A large implement works at Rothwell makes a speciality of its wagon building. A smith at Holmer (Hereford) has worked up a very successful wheelwrighting and motor-body building industry. By keeping a supply of the curved parts that build the framework always cut in readiness, he is able to execute an order for a motor-bus body at short notice. He supplied a local Transport Company with its bus bodies and, through advertising in the motor papers, has got a number of more distant orders, and now has fifteen men employed. Another development, showing how wheelwrighting may be carried on as a branch of another industry, is illustrated by the case of a farmer in Northamptonshire, who has a tractor-driven saw in a corner of a field, where he has put up a few sheds; he uses timber from his own and neighbouring land and repairs carts and wagons and makes sawn and split fencing and gates. He is thus able to provide winter work for his men.

The country wheelwright should be able to obtain timber advantageously, not having to cart it far if it is to be sawn in his own yard. Country wages are lower, so he should be able to build at prices rather below those of the town firms. If the village wheelwright's charges are the same as those in the town it is said that some farmers may prefer to go to the town, except for such repairs as must be done on the spot, feeling that they may find better work there. But probably the village workshop which keeps in touch with up-to-date requirements, at the same time preserving the country tradition of good workmanship and material, can compete on at least equal terms with its town rival.

Owing to a lack of education, to conservatism and mental sluggishness, some wheelwrights continue to do certain work at a loss, through having no adequate system of costing. Prices of material and the cost of labour have changed so

rapidly during the last twenty years that the wheelwright cannot be sure that he is charging properly unless he keeps a careful account of his expenditure on all items. The method of dealing with the material complicates this matter. The timber is sawn into planks or other pieces of various shapes according to the use to which it is ultimately to be put. These must then be stacked away for some years to season. For each piece of work to be done the wheelwright must pick out from his large stock what is suitable. Thus it is no easy matter to estimate the exact cost of the material which he is using.

Mr. Sturt writes, 'I doubt if there was a tradesman in the district—I am sure there was no wheelwright—who really knew what his output cost, or what his profits were, or if he was making money or losing it on any particular job. In later years, after the habit of giving estimates had become common (as it was unknown in 1884), I several times lost work to rivals who, I found out, were working for less than the mere iron and timber were to cost them. They never knew. Nor did they know if on to-morrow's estimate they were to make a fabulous profit. Well on into the present century these matters were settled by guess-work, not by calculation. We knew nothing, thought nothing, of how much we ought to have, but it was very needful to know how much our customer would pay.'¹ Investigations indicate that even at the present day guess-work plays a large part in the reckoning of the prices charged by the more old-fashioned type of wheelwright.

Others, however, are more practical in financial affairs and one, who employs a number of men, explained the following simple but effective method by which he reckons his costings. Each workman—smith, smith's mate, and so on—keeps a diary in which he enters the number of hours worked each day and, at the end of a job, the materials used. The books are 'reckoned up' every Monday and the records kept for a year. The fixed price list is based on such costings and is supposed to give minimum and not flat rates. Flat rates, this wheelwright says, are impossible, owing to the variations in carts according to districts and to individual requirements. He gave the present cost (1922) of making a pair of wheels for a float as about £3 15s. and the cost in August 1921 as about three times as much.²

¹ *The Wheelwright's Shop* (George Bourne).

² The Rural Industries Intelligence Bureau is now stimulating account-keeping and costing.

Organization

There is little Trade Union organization amongst masters or men in the wheelwrighting industry. Probably very few of the men employed in village workshops belong to any union, and even in some of the larger businesses in towns it is not uncommon to find a workshop in which only non-union men are employed. For example, the master of a motor-body building workshop in Herefordshire, where wheelwrighting work was also done, who employs thirteen men, has no trade unionists in his yard because his hands have to do a variety of work, according to the orders which come in, and he stated that if he employed members of unions he would be hampered by the fact that each man would only be available for a single job.

The master blacksmiths, who are closely connected with this industry, have put pressure upon the wheelwrights to induce them to organize themselves, but the question of national versus district rates and of town versus country rates and prices is a vexed one in both trades, as in many others. The organization of master wheelwrights was, however, proceeding apace in Staffordshire in 1922, although it still remains to be seen whether the country firms will successfully be enrolled. There is no doubt that organization is needed, but the coach builders and vehicle makers, whence the movement emanates, are urban rather than rural, and the minimum price list, based on a costing system, which the new Association of Master Wheelwrights aimed at enforcing, if calculated by the standard of town charges, would involve an increase of the prices charged by the village firms.

A levelling of the rates for both building and repairing work—which now vary, not only from the village to the town but from one town to another—might drive some of the trade into the towns, for farmers would undoubtedly resent an increase of the price charged by the local man, whilst it would not be likely to lead to any increase of the wages paid by the country firms, which are lower than those paid in the towns.

Thus, whilst organization is certainly needed, it would seem necessary that it should proceed on different lines from the mere enrolment of the country wheelwrights in one association with those of the urban districts, if it is really to benefit the former. The great difficulty of organizing scattered craftsmen, which is largely responsible for the

haphazard and unorganized state of most rural industries, is of course felt in this connexion. But an association of country wheelwrights might be of the greatest benefit to the industry, not only by fixing a standard scale both for wages and prices throughout rural districts, but also by working out a modern scheme for apprenticeship and by spreading knowledge of the use of machinery, which would make the industry more completely self-reliant and would eliminate certain unnecessary hand processes in the wheelwright's yard.

CHAPTER II

THE BLACKSMITH'S SHOP

THE great changes which have taken place in rural life, and, particularly in agriculture, during the last century have perhaps affected the blacksmith more than any other of the village craftsmen. So long as the horse provided the only motive power for farm machinery, and that machinery remained of the simplest type, the farmer was entirely dependent on the village blacksmith, not only for keeping the horse well shod but also for all repairs to the implements and, to a large extent, for the making of them. Within a comparatively short space of time came the iron ploughs and harrows produced in factories, the complicated reapers and binders, mowers and threshing-machines, and the partial superseding of the horse by tractors and other mechanical power. Obviously, with so much of his old business slipping away from him, the smith needs to adapt himself to changing conditions if he is to survive. Village smithies at the present time may be found in every stage of prosperity or the reverse, ranging from the business of the man who gains his livelihood by farming a small piece of land, but finds that shoeing may still be pursued as a convenient, though barely a profitable, hobby for bad weather, to the busy workshop in which several men are always employed in shoeing or in repairing agricultural machinery and where a motor bicycle is always ready in case of a call for help from some distant farm. In fact, the present condition and prospects of any smithing business depends upon the character and ability of the individual responsible for it, even more than is the case in most small industries, although the particular conditions in the locality, especially the amount of competition from neighbouring towns, also have their effect.

A notable feature of the present-day smiths, as compared with their prototypes of fifty years ago, is that the majority have lost the art of making things. Ploughshares and coulter, the making of which used to form so large a part of the smith's ordinary work, have been commonly made of cast iron for fifty years or so; a smith near Doncaster mentioned the circumstance of a farmer bringing him an

iron share to be 'laid' as a striking event which had occurred once in his life. In a very few cases the making of plough-shares is still a part of the smith's work, especially where a very light soil makes the use of the wrought-iron share advisable. Harrows are more often made by the village smith, the farmer sometimes preferring, as in the case of wheelwrighting work, to have the job done by the local craftsman who understands his special requirements. That an enterprising craftsman may find many possibilities of development along these lines is illustrated by the fact that at least two of the most successful of the large-scale manufacturers of agricultural implements in Lincoln started life as village smiths.

Farriery

Shoeing has for long been an industry out of which, by itself, it is almost impossible to make a livelihood. Before the War it was calculated that the cost of shoeing a horse on four feet, if the shoes were made by the smith, was, including iron, nails, fuel, and labour, 12s. The farmers sometimes tried to bring the price down, so the smith's only remedy, if he were too good a craftsman to scamp the work, was to make a large profit on other jobs. During the War the smiths had their share of the generally greater prosperity, but latterly the Farmers' Union have pursued the policy of trying to bring down the smiths' prices for shoeing to a price near pre-war level. This course, if successful, can only lead to the further decline of the skill and status of the smith, which would ultimately injure rather than benefit the farmer. In some cases farmers have threatened to set up co-operative smithies in order to 'break' the Master Farriers' Association, which has, however, done great service to the farmers in raising the standard of farriery amongst smiths, and thus saving many horses from injury through the ignorance of the men who shoe them. It is said that the conditions of supply of materials to smiths make 'a Ring round the Forge' comparable with the 'Ring round the House' which builders are alleged to have made with the merchants who supply them with building materials; and it is true that the Master Farriers' Association does attempt, as a means of pressing smiths to join, to arrange with iron-merchants that the latter should supply only members of the Association. But, owing to the unprofitable nature of his trade, the country smith has for long been accustomed to the position of deep indebtedness to the local ironmonger

who supplies him with materials. It was said of the ironmongers in a certain county town that, before the War, they could have closed half the smithies in the county if they had chosen to demand payment of long-standing accounts. The ironmongers are obliged to charge high prices to such uncertain customers to safeguard their own interests, and much of the difficulty can be traced back to the old system of long credit insisted on by farmers, owing probably to the slow turnover which most of them experience.

The Farriery Instructors who are at work in certain counties, under the Agricultural Committees, are doing a great deal to raise the standard of shoeing in country smithies. Courses of lectures are given, which village smiths, and horsemen also, are encouraged to attend, and a demonstration at one of the local forges follows. The classes are greatly appreciated and the results shown at the examinations for the Registered Shoeing Smith's certificate are excellent, although in the case of some of the older men there are signs of reluctance to attend classes and, in particular, a dislike of being known to attend them. The smiths, say the instructors, are far more skilled in handling iron than in making good shoes. Ironwork can be learnt traditionally, but the anatomy of a horse's hoof, so important to the smith, can only be learnt by scientific instruction.

Repairs to Agricultural Machinery

With regard to this branch of the modern smith's work there is to be found great difference of opinion among the village workmen. Some consider that it is not worth troubling about because men with more engineering experience than the village smith must be called in for some of the work, and therefore they do not believe that the farmer will ever come to rely on the latter for any repairs which he could possibly get done elsewhere. Others believe that the future development of the country smithy lies in this direction, but having no experience of machinery they are reluctant to tackle even the simplest repairs. Others, again, who are more enterprising, have made an effort to acquire the knowledge and to obtain the plant needed for this type of work, and a few very flourishing businesses which specialize in the repairing of machinery have been met with. There seems to be more opening for this branch of work in the more purely agricultural areas, remote from towns. In the

Midland counties, for example, where industrial life is never very far distant, and where, therefore, garages and engineering works are generally available to supply the farmer's needs, there seem to be fewer examples of village smiths who are doing a great deal of repairing work. Even in a rural district the smith may find several rivals in the field. Sometimes the owner of a threshing-machine, either an engineer himself or employing skilled mechanics, may, in addition to keeping his own machines in repair, also mend reapers and other machinery for local farmers. One case was met with in which the village smithy had failed, and a threshing-machine owner, having bought the forge, had come naturally to be looked to by the farmers for some of their repairs. It is also fairly common in market-towns and even villages to find that an engineer has taken over a derelict smithy, and may employ smiths for ordinary blacksmithing and farriery work whilst he himself, helped, perhaps, by a mechanic, does engineering work, including repairs to agricultural machinery and electrical work. Such a man has, naturally, a considerable advantage over the ordinary village smith without any engineering training. There are also the garages, which sometimes undertake farmers' work, and, more important still, the engineering firms who are agents for the manufacturers of agricultural machinery and supply all the spare parts. Even if the farm is at some distance from the town the farmer's son can often get there on his motor bicycle, and the firm will send out a mechanic to do the job on the spot.

But in spite of all this competition and the lack of training by which many country smiths are handicapped, there are several examples to show that an extensive repairing business can be worked up in connexion with the village smithy by an intelligent and enterprising man. In a village in the West Riding of Yorkshire there is a smithy which has been established over twenty years in which there are two journeymen and one apprentice, the master and one man being constantly engaged on the repair of agricultural machinery, the other man sometimes helping them, but being generally employed with ordinary blacksmithing and farriery work. Two motor bicycles are in use for visits to the farms where repairs are to be done. It is perhaps in this particular respect that the village blacksmith often fails to compete successfully with the repair shop in the town, which always has men ready to go out to the farms for work which must be done on the spot. In this smithy there was

only a hand-drill in addition to the forge, at the time of the investigator's visit, but a power-drill was to be installed, and the engine had already been obtained. The smith was anxious to have a lathe but found the price of this prohibitive. The men in this smithy were kept busy all the year round, but October, November, and December were, as a rule, slacker than the other months; when visited, however, in November 1922, there had as yet been no falling off in the business that year, which seems to indicate that the scope of it was extending. This smith keeps about a hundred binders regularly in repair during the season, and attends to all kinds of machinery in use by farmers over an area extending, on one side, only a couple of miles, but in all other directions as far as eight miles. Rittings which he cannot make he obtains from the agents in York and fits to the machines himself. His only training was the ordinary apprenticeship to a smith, but he is evidently a man of considerable intelligence and enterprise.

Another very successful business of a similar kind was met with in Norfolk, where a certain village smith is known locally as 'The Binders' Master' because of his skill in keeping harvesting machines in order. During 1922 he attended to 85 mowers and 163 binders; harvest time is the busiest season of the year for him. He complained that a farmer would often send for him without giving him any hint as to what was wrong: he sets out, with one of his men, on a motor bicycle—'like a doctor', he says, 'sent for to attend to a casualty'—with his bag of tools and perhaps one or two spare parts (items unfortunately lacking from the doctor's equipment), and sometimes when the two of them arrive it is only to find that a piece of twine has become entangled in the machinery! But he is able to deal with most emergencies which arise, his workshop being well equipped with machinery, including an acetylene welding plant, and a large number of spare parts always kept in stock.

In Lincolnshire the smiths are said to be patronized pretty generally by farmers for the repair of their agricultural machinery, some smiths saying that this constitutes about half of their total work, and others even finding that this is the main part of it. It is a notable feature of Lincolnshire that large towns are few, the villages scattered and communication between them often difficult. Thus, the village repair shop is here much more easily accessible than the engineering works in the town, so that it is probably

due to apathy on the part of the smith if no repairing work is brought to him. In the midst of the Wolds, for example, there lies a little village; the traveller drops down into it from the rolling uplands, where the roads run for miles between the widespread pastures and arable lands with no sign of human dwelling save for a farm tucked in a hollow here and there, or a cluster of houses so small that it can hardly be called a village. To the townsman the place may appear to be only a remote hamlet which nothing less than an earthquake could arouse from the slumber of centuries; but it is the 'metropolis of the Wolds', the centre of the agricultural life of the district; the fact that there were at one time three rope-walks here indicates its importance in this respect, and one rope- and net-maker still carries on a flourishing business. Louth and Grimsby, the nearest towns of any size, are both over ten miles distant across the hills; this is clearly an excellent centre for a smithy and repairing business, yet the last owner of the forge was too indifferent or too timid to attempt to keep pace with the times, with the result that a new-comer, who bought the smithy a few years ago, found that much of the custom had been lost and nothing but shoeing was being done and little enough of that. The present owner is an enterprising man and had experience of machinery repairs when he had worked as a journeyman at Newark; as soon as he made it known that he was ready to do this work the farmers began to bring it to him; during the first harvest he attended to several binders and there seems to be every opportunity for the establishment of a prosperous business. When visited in 1922 this smith had as yet only installed a hand-drill, but hoped to have power-driven machinery when the work developed further. This example shows that the flagging condition of the business in any particular smithy is not necessarily an indication that there is no opening for further developments in that district; it may only indicate a lack of enterprise on the part of the smith, and possibly, also, a lack of opportunity for gaining the knowledge of machinery which is now so necessary to him. In another Lincolnshire village there is a smith who has built up for himself a wide reputation for repairing-work and also for the making of harrows; he keeps from forty to fifty binders in repair and covers an area of thirty miles. Even the neighbourhood of Gainsborough, only four miles away, with its numerous garages and engineering works, does not seem to have any seriously detrimental effect on his business.

In a few smithies repairs to bicycles and motors are effected, but garages and bicycle repair shops are now so numerous that it is not likely that there would often be much opening for the smith in this direction.

There are several difficulties in the way of the smith who intends to specialize in repairing-work but has had no experience of that kind. If a lad is apprenticed in one of the old-fashioned and moribund shops he may be equipped for his working life with nothing more useful than an almost mediæval awe of anything more complicated than a plough. Only a few of the more fortunate obtain any real training in repairing-work. There are certain good courses of training available, but they are few. For example, for Yorkshire smiths the nearest centre for instruction is, the Manchester Municipal Technical School, where there is a course in general smithing work, including the repair of machinery, whilst acetylene welding can be learnt at Leeds or Bradford. At the Ministry of Labour's Instructional Factory in Rural Handicrafts at Beverley, a number of ex-service men have been trained in metal work, including repairs to all kinds of machinery and the use of the power-driven lathe, grindstone, and hack-saw, and of slotting and drilling machines and pipe-screwing machines, but, of the men who took this course during the first few years, hardly any obtained posts in rural workshops; this was due to the fact that the trainees were townsmen, who were not likely to settle down to a rural life, but later some attempt was made to choose men who had formerly worked in the country and who might be able to turn the training to good account in some country smithy.

Obviously such courses as are available in the technical schools of large towns will not be accessible to the ordinary country smiths; a certain amount of knowledge may be acquired from text-books, but a man who is almost entirely unacquainted with machinery and whose education, moreover, was not of a very advanced type, will not glean a very complete knowledge from this source, without other help. Travelling demonstrators, such as those who already give instruction in farriery, would be of the greatest assistance and might, by giving the smith some idea of the developments which are possible, inspire him to follow up these suggestions.

Another difficulty which often stands in the way of the further development of the country smithy is the need of capital for the instalment of machinery. An extensive plant

is not, however, necessary to begin with, and a great deal of work can be done with a hand drilling-machine, which many smiths already possess. The cost of one of these machines, new, would be from £9 to £25, according to size, type, and fittings, with another £3 for a set of drills.¹ Other machines and, later, mechanical motive power, could be installed as the work developed. A large stock of spare parts is also a useful asset, especially if the smithy is in a remote village. The Norfolk smith who has already been mentioned put a capital of £2,000 into his business, but he has a very well-fitted smithy. The farmer's slowness in paying his accounts is another factor which must be reckoned with in estimating the cost of setting up and carrying on any smithing business. The farmer's financial turnover is an annual one, and it is often necessary that that of any tradesman depending on him should be the same. This system of a yearly settlement of accounts is a hard one for the smith, whose expenses for materials and labour are high, but it is the one to which, at present, he must generally adapt himself.

Machinery in Smithies

A hand drilling-machine is probably the most important part of the smith's outfit, after the forge and the ordinary bench tools. Although this is so generally used, few smiths seem to consider that it would be profitable to instal a power-driven machine, but in cases where this has been done the opinion is that the cost of installation is quickly repaid by the saving in labour, provided that there is enough work to keep the machinery busy. In a combined smithy and motor-body building workshop an electric drill, suitable for wood or metal, which could be fixed to any 'light-point' in the shop was a very useful part of the equipment.

Where power has been installed an emery grinder is found to be a very useful labour-saving device. The treadle-lathe was not often met with in smithies, but where there is power-driven machinery the larger lathe which it then becomes possible to use is a very important asset, one smith stating that it would enable him to make many fittings at a cost considerably less than that at which he now has to buy them. A threshing-machine owner said that he did not

¹ See Leaflet No. 4 of The Rural Industries Intelligence Bureau, *The Village Blacksmith and his Outlook*, in which is to be found further information concerning the types of machinery likely to be useful, with estimated costs. The Bureau also issues advice on accounting and cost estimating.

think it would pay him to install a lathe because such a very big machine would be needed for turning the cranks of threshing-machines.

The oxy-acetylene welding plant very seldom forms part of the smith's outfit, and the usual opinion is that there would be little use for it. One smith considered that a very expensive outfit with a steam hammer would be required. In Yorkshire, on the other hand, three smiths were heard of who had installed acetylene welding plants and found them very profitable.

Supplementary Work in Smithies

A smithy cannot well be worked by one man, and, therefore, if the repairing of machinery is not done to any great extent, some supplementary work is needed to occupy the spare time of the smith and his assistant. In a few cases the making of ornamental wrought ironwork is carried on with considerable success, but if this side-line is to be developed the smith needs to have some special ability in design, and some connexion with a firm of architects or builders would be necessary to ensure a good market. A Dorset smith discovered his capacity for ornamental work of good quality through the owner of the land on which he lived, who gave him orders for various objects of this kind. He has executed very beautiful park-gates, and his hammered work on door-latches, fire-irons, and other things is now well known through arts and crafts exhibitions, including those of the Home Arts and Industries Association and the Knox Guild of Design and Craft. He is sometimes able to attend these exhibitions and is in touch with architects. He seems to find no difficulty in selling all the hammered ironwork he can make. The ordinary shoeing and repairing-work is carried on in his smithy, in which his son and another assistant are employed, all of them being engaged on the ornamental work at times when other business is slack. This case indicates that there is scope for good ironwork in connexion with modern domestic architecture, and although there may be few village smiths with this man's artistic ability, yet it is probable that many men might, with some training, produce work, such as door-latches and knockers and fire-irons, for which there is some sale amongst builders' merchants.

A Norfolk smith has built up a good business in the making of iron hurdles. These seem to be used by many

farmers in this district because of their great durability and the ease with which they can be wheeled from place to place on dry, hard ground. They cost about 40s. each but will last a lifetime.

Apprenticeship

There is a great scarcity of apprentices in the smithing industry because of the hardness of the work and also, probably, owing to the fact that for the smith who has not kept pace with modern developments the prospects are of the poorest. One smith pointed out that the County Council Farriery schools are of excellent service to the industry because, whilst young boys may shirk the hard labour of the blacksmith's shop, they may be willing to attend the schools and thus begin to acquire knowledge of and interest in the work.

From a blacksmith, also, comes the suggestion that if proper training by technical experts were available in the villages, a five years' (or even shorter) course of apprenticeship might be more efficacious than the old seven years' term during which the lad received little real tuition. A farriery instructor in Yorkshire gave the following figures to illustrate the shortage of apprentices to the smithing industry: In Leeds there are 53 smithies and only three apprentices, in Bradford two apprentices, in York two; other big towns and the majority of the country smithies have none. The membership of the Master Farriers' Association is about 3,000, representing at least 6,000 farriers, as some have two or three journeymen; amongst them there are less than 50 apprentices (1922).

Organization

The hostility of some branches of the Farmers' Union to the Master Farriers' Association has already been mentioned. But if the farmers want their horses to be shod and their machinery to be repaired by competent workmen they should encourage organization amongst the smiths no less than amongst themselves. It would be the most effective remedy for the boycott of price-cutting farriers by merchants, and might help to check the continual flow of the more competent men to the towns. A lack of local appreciation and understanding is said to drive away from the country a craftsman who has become a little more educated than his fellows, and who must therefore seek companionship elsewhere. Organization, with the frequent

meetings which are necessary to keep it alive, would to a great extent remedy this depressing isolation, and would help to spread through the villages the ideas and knowledge of the more advanced members. Perhaps no more valuable work has been done by the Master Farriers' Association than its insistence on the need for instruction in shoeing. Its aim is to make the 'R.S.S.' certificate a necessary qualification for all master farriers, the leaders of the Association realizing that the economic position of smiths can only be improved by raising their standard of efficiency.

'A smith needs to be always learning if he is to be successful in his trade', said one man who has built up a very successful business. A truism, perhaps, the application of which, to the smithing industry is more important than to any other rural industry, except possibly that of wheelwrighting. Anatomical knowledge of the structure of the horse's foot is necessary to the good farrier, but, once learnt, it will serve him for the rest of his lifetime. Agricultural machinery, on the other hand, is being constantly changed, and the smith who repairs it needs to keep his knowledge well in pace with the improvements and innovations.

The village smithy, although its functions may change, is still an institution essential in an agricultural community, but unless the industry can be developed on modern lines—new branches of work replacing those which are out of date, so that it can still be profitably carried on—the standard of skill will deteriorate, only those craftsmen remaining who have not sufficient enterprise to seek work elsewhere, and in this event the farmer will be the chief sufferer.

CHAPTER III

THE SADDLER'S SHOP

THERE are three main branches of the rural saddlery industry—saddle-making, collar-making, and harness-making and repairing. Saddle-making is a highly skilled and specialized industry, and hardly exists now in the form of rural workshops; although a few saddles may be retailed through the small country saddlers' shops, the greater number are supplied to larger firms and to the army. Horse-collar-makers in rural districts, again, are very few, the greater number working in large towns; a man in the Boxmoor district (Herts) said that he knew of no others between him and Birmingham, on the one side, or London, on the other. He had worked by himself for the last three years, but formerly employed three men. His collars were sold wholesale to saddlers.¹ The horse-collar-makers at one time had their own Union, but this has broken up since the War, and the industry is now controlled by the Master Saddlers' Federation, which is said to regulate wages and conditions very strictly, and to forbid the sale of collars, except at retail prices, to any one outside the Federation. A collar-maker often, however, does a certain amount of local repairing-work.

The craftsman to be found in nearly every market-town, who usually keeps a shop in which he may sell saddles and harness, halters and ropes, and, occasionally, other wares, such as basketry or ironmongery, is commonly spoken of as a saddler, but, strictly speaking, he is more often only a harness-maker. He may, indeed, be only a dealer in harness and a repairer. One man ingenuously explained that he preferred to sell a set of second-hand harness, rather than one of his own making, because the former would come back to him again and again for repairs, and thus he would make more profit out of it than he would on the sale of his own handiwork. In a small country town in the Plain of York, about ten miles from the city, there was one harness-maker with a small shop who employed one old man; another 'saddler' in the same town was described as 'only

¹ The making of the rush or sedge collars which are in use in some districts is a branch of the rush industry, described in vol. ii of this series, *Osier Growing and Basketry Industries, and some Rural Factories*.

a jobbing man', that is to say, one who sold harness and did repairing work and odd jobs; the former made harness and cart saddles (but not riding saddles, although he could re-line these); this was in the midst of an agricultural district, and the nearest town in which another saddler was to be found was seven miles away, but yet there was not enough work to support these two comfortably.

The factory-made harness is also, of course, sold in the larger shops of towns, and another form of competition is to be found in many markets where Cheap Jacks sell second-hand harness. Both rope-makers and saddlers have these itinerant rivals; as one indignant craftsman put it, 'When I have set up my stall in the market, one of these fellows will come and spread out his sheet beside me and squat down on the ground like any gipsy; he beats down my prices all the time, selling worn-out stuff, and some are mugs enough to buy it'. The firm which sends its goods round to the markets in a motor-van and which sells factory products, is a competitor just as troublesome, although more dignified. In 1922, the difference in price between hand-sewn and machine-made harness was £2 to £3 on a set costing from £14 to £20.

Materials

For their materials the country saddlers are mainly dependent on the small oak-bark tanneries; they may buy leather direct from a local tannery or from agents. The saddlers, however, now use such small quantities of leather that although the tanneries are few and far between, the saddlers alone cannot provide a sufficient market for the whole output. For example, a small tannery in the North Riding of Yorkshire, which uses from 800 to 1,000 hides yearly, can supply all the local saddlers, and still its largest market is a big London firm; a small firm of curriers in a country town in Lincolnshire supplies many local saddlers, but this is but a tiny item in the whole list of sales, most of which are made to Scottish and London firms, and to exporters. A West Riding tanner who produces leather for boot uppers and saddlery, using from 600 to 700 hides yearly, said he believed that most of his output was used by small country boot-makers and saddlers, who buy it from the agents to whom he sells. It is certain that the success of the country saddler, like that of the country boot-maker, must depend greatly upon his ability to obtain a supply

of the best oak-bark tanned leather, and unless the leather is bought direct from the tannery or through well-known and reliable agents its quality cannot be depended upon. Direct sale from the tannery to a number of little firms which only need small quantities is obviously troublesome and difficult.

Labour

There seem to be few apprentices to the saddlery, and it is said that a number of skilled men are unemployed. The rapid decline of this industry during the years when motor transport and agricultural machinery have been replacing horses in almost all their functions has led to a feeling that there is no future for saddlery.

The value of the harness made by the country saddler, as compared with that which is produced in a factory, depends as much upon the more durable hand-sewing as upon the quality of the leather. For the saddler there is no possibility, as there is for the wheelwright or other wood-worker, of lightening his labour by the use of machinery. It is only by the employment of the more expensive hand-work that he can make harness which will be more durable, and therefore more valuable to the farmer, than the product of the factory.

A harness-maker of the old school spoke of the pleasure it gave him to see his work in use on the horses of some local farmer. This man expressed the opinion that the industry was likely to survive for a long time in the hands of a small number of master craftsmen, each working in a country town and serving a large district; that there was no opening for the extension of saddlery as a rural industry, and therefore it would be useless to train a large number of boys, for there was not likely to be room for many journeymen; that those who enter the industry should be of the best type of workman, capable of becoming masters.

The collar-maker needs skill equal to, if not greater than, that of the harness-maker. The straw stuffing is prepared before use, being picked up, a handful at a time, and combed through with several strokes of a wooden tool with wire bristles; the short and loose pieces are thus removed. The shaping of the collar is described as 'eye-work', because it must be judged by the eye, and a mistake may not only give the collar an ungainly appearance, but also cause it to chafe the horse. In 1923, it was said that a good journeyman could earn from £4 to £5 a week on piece work. This

small and limited industry suffers less from competition than harness-making.

There seems to be a general feeling throughout the saddlery industry that, in spite of the great decline during the last twenty years, there are signs of a slight revival of the rural industry of saddlery. 'The return of the horse' is spoken of hopefully, but although the horse may in many instances have ousted the tradesman's motor-van and the farmer's tractor, owing to the great cost of the upkeep of machinery (particularly when it is subjected to the rough handling of farm lads), yet this is not likely to be more than a temporary tendency. With the probable reduction of the price of machinery and an increase of mechanical knowledge, the widespread use of the car and the tractor will be re-established. Nevertheless, the complete disappearance of the horse from the farm is not likely to come to pass. Whether the farmer is, in the future, to depend upon the country workshop for his horse equipment, or to obtain it from the factory through the medium of the shopkeeper, who is at best only 'a jobbing man', would seem to depend upon the training and ability of the lads who enter the industry. In any case, harness will continue to need repair from time to time, and this will be done by the local craftsman so long as he exists. The possibility of making himself something more than a mere patcher and mender, lies in his own hands and in his own brain.

CHAPTER IV

ROPES, NETS, AND HALTERS

Geographical Distribution of Rope-making

ROPE-MAKING is one of the ancient crafts, and as in the case of others, notably basket-making and pottery, the processes, where they are still done by hand, have changed remarkably little in the centuries. There still exist Egyptian hieroglyphics which describe the various processes of rope-making, hand-spinning, topping, and others, in a way which shows that they do not differ substantially from methods still used in country rope-walks. Even in England, the industry situated in and around Bridport is thought to be a thousand years old, and the earliest written record dates from 1211. The town was granted a charter in the reign of King John for 'the supplying of cordage to the King's navee', while the old saying, 'may he be stabbed with a Bridport dagger', referring to the hangman's ropes made there, originated about 1510.

It is recorded¹ that seven ropers left Bridport in 1588 for Gateshead-on-Tyne to start the rope industry there, though it is possible that this was already a district of roperies, for Tyneside ropes are said to have been made five hundred years ago. The Bridport influence must have been strong, however, even if it was not responsible for the industry, for a Guild of Ropers in the North had arms similar to those of the Dorset town, and the same motto, 'May hemp bind those that honour won't'.

The rich soil and damp climate of South Dorset were more favourable to the cultivation of hemp than many other parts of England, and its former abundance there was the chief reason for the extent of the industry in that district. Later, the English growth was not able to compete with Irish and Belgian hemp, and though the industry survives in Dorset, all the raw material now comes from abroad.

There have been, roughly, three periods in the history of the trade in this part of the country. The first lasted up

¹ Hutchin's *History of Dorset*.

to the end of the seventeenth century, when Bridport did a staple trade in ropes for shipping. Next, there sprang up a demand for nets and ropes to be used in the Newfoundland fisheries ; and with the nineteenth century began the new phase of adjustment to the competition of machinery.

Rope

Besides the Dorset industry, there are individual firms of very old standing in many other parts of the country. Several can produce records over two hundred and fifty years old. For the fifth or sixth generation of one family to be still running a ropery is not uncommon ; in Lancaster, the fifteenth successive member of the same family carries on the trade, which was opened in 1628, while in Dursley, Gloucestershire, there have been ropers of the same name as that now in the industry since 1600. The two most picturesque rope-walks are situated in the mouth of a great cavern at Castleton, in the Peak District of Derbyshire ; they have been in the hands of the same family for two hundred and fifty years.

The importance of these old rope-walks, and pride in their age and the quality of their work, is felt throughout the district. One roper in the North Riding of Yorkshire was spoken of with great respect by all the others. As one of them said : ' He holds the main thread for many a mile around here.'

Where the old-fashioned rope-walks survive, they are to be met with in the country, partly for considerations of space. They must be at least eighty yards in length, and may be from a hundred and sixty to two hundred and forty yards long. Space in a town is too valuable to allow of this, and members of the trade estimate that there are about three hundred small rope-walks in country districts.

The Bridport industry has developed almost entirely into a factory one, only one old-fashioned small firm with a long rope-walk surviving. In the bigger factories, twine and rope are spun and twisted by machinery, and generally the only signs of the old rope-walks that remain are the long, narrow gardens attached to the cottages. Small roperies are, however, found in Dorchester, Yeovil, Melksham, Ilminster, Bridgwater, and other places in the west of England.

Old-fashioned 'walks' are still in use in many parts of the country where agricultural ropes are required. At Hailsham, in Sussex, there are two big works where ropes

are made by hand. One of them has four uncovered walks, and four covered ; it was founded about a hundred years ago by a man who had been an employee in the other works, and it held its own successfully, but on a comparatively small scale, until the War. Then it obtained large government contracts, and is now bigger than its old rival.

Ropes are made at Maidstone, and also at Lewes, though here the quantity is so small as to be negligible, and even the pig and rabbit nets and halters needed in the district are bought ready-made from Bridport.

Rope-makers in Gloucestershire are not numerous, there being only one at Dursley and one at Moreton-in-Marsh. Dursley used to be a very important centre for rope-making, for besides the old firm which started in 1600, there were about a dozen other rope-makers, eight of them of the same family and name as that of the oldest firm. One business has developed into a large works for making matting, where a very small quantity of hand-made rope is occasionally turned out, but the others, except the one old firm, have disappeared.

The ropery at Moreton-in-Marsh, which is a hundred years old, caters for farmers and serves the markets of Cirencester, Cheltenham, Warwick, Stratford-on-Avon, Gloucester, and Charlbury, and all the country in between. The nearest rope-makers here are in Chipping Norton, Witney, and Banbury. Inland agricultural areas such as these always have a greater number of roperies than coastal districts which use machine-made ropes.

Several of the market-towns in Nottinghamshire and Leicestershire have their rope-walks. Retford boasts two, an old one dating from 1832, and a new one started by a former employee of it. The roper at Newark learned his trade as a boy at Burton-on-Trent. He worked in Newark for eight years as a tent-maker, till at last he got his opportunity and bought the rope-walk there. He had been running it for thirteen years in 1920, and it was flourishing. There are roperies at Worksop, Mansfield, and even Tuxford, a very small place, and near by in Lincolnshire at Gainsborough, Lincoln, Wragby, and elsewhere.

In Leicestershire there was only one small rope-walk to be found ; this was at Loughborough, but it also served the districts round Melton Mowbray and Ashby-de-la-Zeuch, for the roper attended the markets at these towns.

Besides the two big and important roperies of Derbyshire, situated in the cavern mouth at Castleton, only one rural

rope-maker was discovered in this county. An elderly man in a tiny village two miles from Matlock, made a few ropes for neighbouring farmers. The rise of industrialism in Derbyshire probably accounts for this decline of rope-making in the greater part of the county.

In the East Midlands were found nine or ten small roperies where ropes are still made by hand, some in the larger towns of Cambridge, Peterborough, and Hitchin, others in smaller places, Shelford, St. Ives, Raunds, Stoke Bruern, Woburn Sands, and Boxmoor. The roperies at Stoke Bruern and Boxmoor are on the banks of the Grand Junction Canal, and their location was probably determined by this factor, for they do a good deal of work for the canal boats. The chief output of the others is in the form of farmers' ropes, and fiek and wagon covers, and they are often situated in market-towns, but beyond this there is no special influence determining their situation.

Seven ropers are met with in the North Riding, and they also make nets and halters; one each in Bedale, Hawes, Barnard Castle, Melton, Thornton Dale (near Pickering), and two in Kirkby Moorside. The ropes, nets, and halters made are sold almost entirely to local farmers. They are mostly old firms, one dating back to about 1770.

This industry flourishes more in the East than in the West Riding. In the East Riding the market-towns are more isolated and are of the old-fashioned country type. There are two roperies at Pocklington, one each at Driffield, Kilham, Bridlington, and Hunmanby, whilst only three were found in the West Riding—one at Otley, one at Ripon, and a third which has developed into a news-agents business with roping carried on as a side-line, also at Otley. Several of them are old firms dating from the eighteenth century.

Farther north there is in Durham, at Chester-le-Street, an old ropery which was started two hundred years ago, now run by an old man of seventy-three and his son. The present man's father was in the business all his life, but before that it was in another family. It makes all kinds of agricultural ropes and various kinds of pig, sheep, and hay nets.

Barnard Castle was once a flourishing seat of the carpet industry; the large mill now makes shoe-string and twine from flax and hemp, and occasionally the waste is made into rope of a poor quality. This is machine-made, but there exists also in the town an old-fashioned rope-walk where agricultural ropes are made by hand.

At Berwick-on-Tweed there are three rope-makers, one in the town and two in Tweedmouth, at the harbour. They all produce a certain amount of hand-made rope for farmers, and to a smaller extent for fishermen.

Three roperies are still carried on in the Lake District, two in Kendal and one in Penrith, all very small, and a flourishing concern of great age in Lancaster.

In the Eastern counties agricultural ropes are made in a small walk in Norwich, a few are hand-made in Chelmsford, while there is a large firm at Haverhill which is much interested in the making of ropes by hand. The small firm in Norwich is old, having been established over a hundred years. The grandfather of the present owner took his stand in Norwich market for the first time on the day on which the murderer Rush, the last man to be executed in public, was hanged. This was on March 30th 1849.

Fishermen's twine and nets are made in Lowestoft, Yarmouth, and King's Lynn. The Yarmouth and Lowestoft trade is carried on under special conditions and has some peculiarities. These conditions include that of net-making by out-workers, to which so many problems are attached. In Lincolnshire also, the most important product of the greater number of ropers is nets.

Varieties of Rope made

It is difficult to know the exact difference between lines and twines and rope, but the Trade Board has defined an inch and a half circumference and under as a line, while anything larger is rope. There is a far greater demand for hand-made lines and twine than for rope. The farmers' 'ropes' for carting and ploughing are technically 'lines'. In Hailsham, besides the demand for these agricultural ropes, large quantities are required for the Navy and for Trinity House, which superintends the marking of channels for coastal navigation, placing lightships, and buoys. The ropes required by both these departments need to be of the best; and thus are necessarily hand-made. Most coastal towns rely on the supply of ropes from Bridport. The only other hand-made rope heard of in connexion with shipping was a certain sort of 'Yacht Manilla', made in Southampton and the Isle of Wight. It is bought by private yacht owners.

Small rope-walks nearly always produce farmers' ropes of all sorts, plough lines, halter shanks, cart ropes, and

others. Sometimes, in addition to the usual kinds, there are local specialities ; for example, in Hawes there are ropes of a particular length for binding the hay on to the sledges which are used in this district, instead of carts, on the steep hills ; and in Malton a good many cellar ropes, one inch thick and very strong (of hand-spun yarn) are made for the Norton breweries. The Cambridge ropery makes special ropes for use in the Cambridge laboratories.

At King's Lynn, besides halters and plough lines for farmers, 'coir' rope is made for fishermen. Coco-nut fibre is the material, and it is used for warps, for pulling nets in and out of the water.

Apart from the factories, there is only one small rope-walk in Yarmouth. Owing to the drastic action of the Trade Board, the chief manufacture here is of what is called 'nozzels' or 'ozzels' in Norfolk, sometimes spelled 'norsels', but in Scotland known as 'duffin'. It consists of short pieces of twine about a foot long which are attached to trawl nets to hold corks. All the twine for this purpose is made in the walk, and every process done by hand—heckling, spinning, twisting, and dressing ; the twine is then cut and tied into bundles of a thousand. The firm produces about twenty thousand bundles in a week.

Besides lines and cords of jute, hemp, and flax, rope is sometimes made of horsehair. In Gloucestershire, as well as in one or two districts of Yorkshire, this material was found in use for foddering cords. Farmers like it because it will always slip readily, whereas jute and hemp swell or stiffen with the wet and will not slip. Another use for horsehair there is for 'cow-pans', used to 'pan' the cows (to tie their hind legs) if they are apt to kick when being milked. A roper in the East Riding likewise makes a special 'cow-tie' of horsehair, for softness, mixed with hemp for strength. Because of its quality of not stiffening or swelling in the wet, horsehair is also used for clothes-lines. But of recent years its use for all these purposes has been on the decline.

A West Riding roper bleaches and spins white cord for window-sashes for a York firm. This man says that there is little of this industry left, or of that of making bell ropes, but the latter is still done in several walks, and one or two ropers consider that these must always be made by hand.

For the boats on the Grand Junction Canal the heavy tow ropes and mast ropes are factory-made.

Fishing-nets

Until a hundred years ago, all nets were made by hand. The new methods were only gradually adopted, and in Bridport and Lowestoft 'braiding', or netting by hand, is still done by many hundreds of women workers. In Yarmouth, twine and line for the nets is also made by hand, and fishing-nets in large quantities are wanted in both towns. The Lowestoft herring fleet, fishing in Cornwall, had twelve score mackerel nets with it in 1922, and in 1923 had sixteen score. Making trawl and drift nets is an important industry in Yarmouth and Lowestoft, and various kinds of work, including tanning,¹ are done in connexion with it. The 'norsels', or 'nozzels', short pieces of rope to which corks are attached, are made by men, and numbers of girls are employed to add the 'masking' stripe to which to attach nozzels, and to put ropes on the bottom of the nets to hold them down when in the water. Pollards, or buoys, are also made; these are large canvas bags, painted to keep out the water; one is put on each net to mark its position in the sea.

Trawl nets used to be made at Hunmanby, on the east coast of Yorkshire; as many as twenty hands were employed there at one time on the work, but the trade was very uncertain. Trawl nets are difficult to make, as they are constructed in several parts which have to be fitted together. One man said that he had lost more than £500 over these nets, and the many small makers who used to be scattered up and down the coast have now gone out of the business, and there are none left.

No trawling is done at King's Lynn, but mill-spun yarn is obtained from Bridport and supplied to the fishermen, who make their own netting. Nor is there any fishing-net industry at Berwick, as here too the fishermen make their own.

Agricultural Nets

There are about a dozen net-makers in Lincolnshire, nearly all in the Lindsey division. The majority of them also have rope-walks, and make halters, but pets are the mainstay of their businesses. It is noticeable that in Kesteven, where there is less sheep farming, there are very few net- and rope-makers, whilst in Holland, where there is no

¹ See chap. xiii, 'Tanneries'.

demand for nets, the old rope-walks have either been closed down or converted into rope and twine factories.

Ropers in the East Riding of Yorkshire make a great many sheep nets, and a few cart and other nets. Besides the making of sheep and pig nets, a good deal of repair work is done, the roper sometimes going to the farm to do the work on the spot. There is less net-making in the West Riding, though one firm there makes a good many rabbit as well as tennis nets, in addition to the more usual varieties.

At Berwick there is a big demand for sheep nets, and till recently there were two netters in the town besides the rope-walks. Many sheep nets are also made in Nottinghamshire and Leicestershire, particularly at Retford, and a Peterborough firm also turns out a few of these. One or two are occasionally made by a roper in Hertfordshire, but there is no big demand in this district. Pig nets are the chief product here; they are used to put over carts when taking pigs to market. Fly nets for horses in summer and hay nets are also made in this district.

In Gloucestershire, all sorts of nets are produced for use with sheep, pigs, and rabbits, but for sheep-folding hurdles are more in demand than nets. The roper at Dursley supplies a demand for calf muzzles, a small net put on the calf the night before the cow is to be sold to prevent it from sucking. He has invented a little device of punched leather to put inside the muzzle and prevent the net pressing the calf's nose too tightly, thus giving it more air.

Besides the tennis nets made in the West Riding, a Cambridge firm makes a good many boundary nets for cricket, tennis, and other similar purposes. A net dealer in Peterborough mends up old fishing-nets for use in gardens and orchards and for sports. Small roperies find net-making useful to fill up their slack time in the winter.

Halters

Roperies in nearly every agricultural district make hand-woven halters as well as ropes and nets. Some ropers do not trouble to weave the head pieces, as the machine-made are so much cheaper. As with ropes, the factory products are composed of pieces cut from a length, whereas the hand-made articles are each of them separately twisted, or woven. Where slip halters with the nose piece are preferred, these must be made by hand. At least one roper, however, weaves halter webbing in long pieces on a flat

loom, winding it on a roller as woven, and afterwards cuts it up and makes noose halters. Coffin webbing, similar to the ordinary halter webs, is sometimes made, and belly bands for use on heavy carts are woven of thick twine. In Gloucestershire, cloths for straining cider used to be made in the autumn. They were woven of horsehair, but are not now in much demand.

Tents and Canvas Covers

Many roperies make tents and marquees, which they let for use at agricultural and other shows, and nearly all make canvas covers for several purposes, such as for wagons, private cars, vans, canal boats, or yachts. Besides these waterproof covers, loin cloths, knee aprons, and blinds are sometimes made, and bags and sacks for coal and corn. Occasionally the trade in these is greater than in ropes. They are sewn by hand in many roperies, and it is said that a hand-sewn cover will wear for three or four years, whereas a machine-sewn one generally comes back for repairs after one year. Sometimes this sewing is the only hand-work done in a factory which has grown out of a rope-walk. At other places, such as Peterborough, the tents and covers are sewn by machines, operated by girls.

Many roperies make sacks as a side-line, particularly a very strong pattern for coal dealers, holding one hundredweight of coal, bound with rope and having rope handles.

A firm at Canterbury used to weave all their sacking for 'hop-pockets' and 'sails', or stack-covers. Now they get the stuff by the yard from Dundee and their men sew it by machinery.

The roperies in the Lakes are almost the only ones that do not make anything in the way of tents and covers. At Lancaster there are sail-makers who have this branch of the business in their hands, but in Cumberland and Westmorland the severity of the weather which prevents outdoor stacking, and the prevalence of roofed hay-sheds limits the demand for waterproof covers, so that it can be satisfied by the sail-makers of Lancaster or by the Midland factories.

Raw Material

Hemp, jute, cotton, and flax are the usual materials from which rope is made; to these horsehair is occasionally added. The best quality hemp comes from Russia, and the lack of Russian supplies is severely felt by rope-makers.

Other countries from which material comes are Italy, India, and the Philippine Islands. Fibres are usually imported raw, and are spun in the United Kingdom, jute being made up in Dundee and hemp in Leeds. During the War there was a great revival of flax-growing in Yorkshire, Somerset, and in the Eastern counties.

The two main sorts of fibres used in rope-making are divided into the hard and the soft. The hard, or coarse, are East African sisal and manilla. Americans have a great advantage in the rope-market on account of the extensive cultivation of the latter in the Philippine Islands. With the increasing use of sisal, grown in the British colonies of East Africa, English rope-making may eventually be able to compete with American in binder twine, which trade America has had completely in her own hands. A very poor sort of fibre is sometimes made from the bark of banana trees; it looks very much like manilla fibre, but is entirely unlike it in quality. The soft fibres are hemp, jute, cotton, and some others, and with these alone is hand-made rope concerned.

Hemp used to be grown near Bridport, but it could not withstand competition first with the Irish and Belgian, and now with the many other sorts which come from abroad. Small ropers usually get their material from dealers in Leeds, who import it from Russia and other places.

Russian and Italian hemp are the two kinds most frequently in use. The Italian is soft and fine (one roper describing it as 'like wool'), finer than Russian, and of a softer texture, but it is liable to go hard when worked. Many prefer the Italian variety to the Russian for all purposes, and say that the latter was only used before the War owing to its cheapness. It is, however, considered to stand the weather better, and its length is more convenient than that of Italian hemp, which may be eight or nine feet, much too long to wind conveniently round the waist, so that hand spinners often prefer the Russian, its length of three or four feet being hardier to manipulate.

Russian hemp has hardly come into use again as the price is still very high; all that arrives is bought up by large firms, and the small quantities wanted by the country roper for spinning a little yarn occasionally, cannot be got. One roper reported that he had bought some called Silesian, but it was inferior to the pre-war Russian kind. Before the War, Italian hemp was much dearer than Russian, and was used mainly for very fine work, such as the white cord for

window-sashes, but now it is cheaper, and therefore in more general use. Most ropers would be glad to get Russian supplies again for the greater part of their work.

Hemp is imported in its raw state, but compressed. This does not injure it, but the finished rope cannot be compressed in the same way. It is cheaper, therefore, to import and spin in England than to manufacture and export finished rope from the countries of origin. During the War, Russian hemp was unobtainable, and Indian hemp was often used. One man considered it better for use in a small walk than Russian, because it is so much cleaner. It has no mud on it, he claimed, whereas the Russian is very dirty. In a large place with easy facilities for cleaning, this is unimportant, but clean hemp is important to the man in a small ropery, because it can go straight into the heckles without any cleaning process. But the greater number who had used a good deal of Indian hemp expressed the opposite opinion.

The most valuable attribute of Indian hemp is its capacity to stand the weather. One spinner sometimes uses a thread of manilla fibre, for strength, covered with Indian hemp for durability.

Jute is much less durable than hemp, and is used for all the cheaper grades of ropes. It is five feet in length as compared with the two and a half feet of sisal, the former coming from the stem of the plant and the latter from the leaf. It sometimes comes into the country already dressed, or 'straightened', but more usually raw, and is then turned into mill-spun yarn at Dundee, or sometimes at Leeds. When yoke halters and other goods are made by machinery, jute is the material used.

A sheep net which would cost 30s. in 1922 if made from Italian hemp, would have cost from 50s. to 55s. if made of Russian hemp.

Hobbles are sometimes made of cotton, which is softer than hemp but does not stand the weather so well. One or two firms also make cotton rope for halters, using mill-spun yarn from Lancashire. In that country, cotton rope is used for belting for small power-driven machines, as it does not stretch in a moist atmosphere to the extent that hemp does, but there seems to be no demand for it for this purpose elsewhere.

Coco-nut fibre yarn, of which 'coir' rope is made, comes direct from India. It is of this yarn that door-mats are made, and in the hop district it is used for training hops.

Processes and Tools

Before its introduction to the rope-walk the hemp has been 'steeped' or 'retted', and broken and cleaned to get out the 'shive' or woody parts of the stem. The first process in the ropery which must take place before it can be spun is to 'dress' or 'hackle' it. One roper described it coming in looking 'like hay', full of dust and woody particles, as well as tow. All of these have to be removed, and ropers in a small way often prefer to buy dressed yarn.

The dresser winds the end of a skein of hemp round his waist, grasps the middle of the skein, and draws the free end again and again through the hackle, a set of steel teeth fixed on the edge of the workman's bench or table. Then he repeats the process with the undressed end, winding the end already dressed round his waist. Care must be taken not to leave the middle of the skein undressed, and for this purpose he tries to comb it on the teeth as near up to his hand as possible. The hemp is heavy and thick, and in order that the teeth may penetrate the whole of it, he lifts the skein high above his shoulder and brings it down on the teeth with some force. This process combs out the 'short', some of which can be used for rough work, such as the top cord of nets. Machines, on the other hand, spin up the long and short together, and machine users even buy up this 'short' waste from hand-spinners, and are able to work it into their yarn. As a result it is not so strong as the hand-spun kind, but cheaper.

There is a great diversity of opinion and practice as regards hand-spinning. Of nine firms in one district, four no longer do any, regarding it as out of date. They say that spinners cannot be found, and it is far cheaper to buy mill-spun yarn. Three others prefer to spin all their yarn by hand, one giving as his reason the superiority of hand-spun yarn, owing to the use of shoddy in the mill-spun; the second maintains that it is cheaper to spin by hand; and the third, an elderly man, says that though there is no particular advantage in quality or cost he likes to do it. All of them use a certain amount of mill-spun yarn, as the hand-spinners cannot keep pace with the demand for rope and nets. The remaining two firms use mill-spun yarn as a general rule, but still spin by hand for special purposes, such as making halter- and whipping string-shanks, cart ropes, cellar ropes, bell ropes, and cliff-climbing ropes, in which special strength is required. There are a few

roperies to be found, such as the flourishing though old-fashioned one at Lancaster, where all the yarn is hand-spun, and in all counties there are to be found roperies which do some spinning by hand.

Spinning is the most skilled branch of ropery; one employer told of a spinner he once had who could spin two threads at a time, one in each hand, but as a rule the spinner, with the hemp wound round his waist, walking backwards from the wheel turned by a boy, draws out the thread with his left hand and lets it run through his right, in which he holds a piece of material to protect his hand from being cut or rubbed. The spinner gathers the fibres with his hands from each side of his waist, and the difficulty consists in feeding them evenly and smoothly on to the twisting thread. The whole effect of the spinner moving slowly backwards in the dim light of the rope-walk, steadily producing a thread from his middle, is that of a spider weaving a web in its lair.

Mills will spin yarn to any given pattern at a very small cost, but some roperies have installed light machines for spinning their own yarn. One of these can spin as many hundredweights in an hour as a man can spin pounds in the same time. A good spinner produces one hundred-weight of hemp-yarn in a day.

In the past a great deal of hand-spinning was done by women; there were some who could spin sixteen lengths out of a pound of fine hemp. As one length is about seventy yards, this is very fine spinning indeed. Binder twine now takes the place of this fine sort, and modern spinning is done entirely by men.

After spinning, the yarn is 'hardened' or twisted; the strand is then 'sized' by hand in some roperies with a 'rubber' made of horsehair. Those who follow this practice consider it more effective than when done by machinery. The strands are then 'laid', or twisted together so as to remain solidly in position as rope. The rope is then pulled to take the strain out and sized again, and when dry, is 'finished' or rubbed down with a 'rubber', made this time of ordinary rope, not horsehair.

The usual country rope-walk is from eighty to a hundred yards long, though some are longer. The final length of a piece of rope produced can only be that of the walk. The most expensive machine in a factory is that used to wind up the length of rope, and the purpose of a walk is to produce the length without a machine. Six or more strands

of rope can be made at a time, provided that there is space to keep them apart and the necessary fixtures or machinery to deal with them. The width of a walk is of little importance as compared to its length.

Two wheels are used, one to twist the threads, and a second to tighten the twist. They are often turned by boys, or in a few cases by an electric motor. In one such walk, however, the workers preferred the hand-turned wheels, saying that with the others the threads are apt to be twisted unevenly, one being shorter than the others, so that the rope will not stand so much strain. Possibly the objection arose from lack of experience of the machine, which had not long been installed, for in a large ropery at Haverhill motors were used entirely for turning the wheel. The only actual difference in action is that when turned by hand the wheel moves more slowly, and therefore the roper has more control over the threads. Practice in speed is probably all that is needed to make the motor as popular in the one rope-walk as in the other.

The possibility of one strand being shorter than another in a rope is a serious one. One roper claimed that part of the inferiority of machine-made rope is due to the method of twisting. This is done in such a way that the outer strands are longer than the inner ones, which gives it a neat and smooth appearance, because the inner strands are not continually coming out from the inside and back again, as in hand-made, but when the strain comes, the inner ones, being shorter, break. A maker of machine rope, however, declared that any rope, whether hand- or machine-made, if above a certain size, must have a 'heart' or inner strand which runs straight down the middle, and is therefore shorter than the outer ones, which twist back and forth, and that this does not affect its strength.

Short lengths of rope are made on a 'twisting machine', or 'jack' and 'cart'. The jack has three hooks fixed in a row: the cart consists of an upright post on a wheeled platform, with a single hook on the post. The cart is placed at the required distance from the jack, which is rather more than the length of the rope to be made. The yarn is wound back and forth on the hooks from the cart to the jack, till each of the three hooks on the latter has three lines of yarn running to the hook on the cart. A handle on the jack is turned, revolving the hooks, and thus each set of three strands is twisted into one, the cart being drawn forward on its wheels by the shortening of the yarn. The

strands are then rubbed over with paste and a boy holds the 'top' between them near the cart. The top is a block of wood, rounded and tapering slightly, with three grooves cut down the sides. It is held by a handle made of a peg driven in. The strands of twisted yarn lie along the grooves, and the top causes them to twist evenly. Again the handle of the jack is turned, and this time the three twisted strands are twined together. The cart runs forward, the boy holding the top moving it along as the twisted length behind it increases. In this way a piece of rope about six feet long can be made up in a few minutes. The bigger jack, which is used to make ropes up to a hundred yards in the ropewalk, and which may be turned by an engine, is worked on the same principle.

Besides the motor for turning the wheel, there is occasionally a machine for drawing the rope through size to make it smooth, and for balling.

Weaving halters is a side-line with most rope-makers. Halters are of two kinds, the yoke-halter, a simple noose to go round the animal's neck, with a leather 'eye', which can be made by machinery; and the slip-halter, formerly called the 'German', and now often the 'Yorkshire', halter. This kind is woven in separate lengths, the nose-piece being made first and then woven into the other as it is made; it has a bound 'eye'. This halter cannot be made by machinery.

For weaving the halter webs a flat loom a yard wide was in use in several cases. Other ropers, particularly those in Yorkshire and Lincolnshire, used an apparatus called a 'bat' or 'beater'. This consists of two upright posts fixed at the required distance apart, according to the length of web to be woven, the different parts of a halter being made separately. The warp is formed by a length of thread wound round these two uprights. A piece of twine is threaded through these strings in such a way that one set of strings can be pulled through between the others by a horizontal movement, as one layer of the warp on a loom is pulled through the other by a perpendicular movement of the treadle. The weft is then made with a bobbin threaded up and down between the strings, a batten, shaped rather like a large knife, but with both edges blunt, being used to keep the weft close enough. The 'bat' with two uprights, one fixed and one movable, is particularly suited to the making of slip-halters, because by means of the movable post any required length of webbing can easily be woven.



THE ROPE WALK



HAT-WEAVING ON THE "BAT"

The warp having been made of a continuous piece of string, there are no unfinished ends to ravel out.

Another device often used in Lincolnshire besides the 'bat' is very simple, consisting of two wooden bars supported on tiny legs fastened on a bench at the required distance apart. The warp threads are wound round these, and the two layers are kept apart, to facilitate the threading of the weft, by a movable wooden block between them. The two layers are 'crossed', or pulled up and down through one another, by a cord fastened to the threads on one layer, as on the bat. A Lincolnshire halter-maker claims to have invented this method, which is said to be easier to manipulate than the bat, because the blade of the wooden batten, with which the weaver beats the weft tightly together, is kept horizontal, whereas, on the bat, it is held upright, the warp being wound round upright posts.

In Gloucestershire a loom was used, but the principle was the same as that of the bat. The halter band runs from left to right, the heddles (metal eyelet-holes fixed on cords) being on the weaver's right, and the treadles extending across the width of the loom. The weaver threads the bobbin back and forth across the strip in front of her, the narrow extent of the strip making this possible. With a heavy steel batten, shaped like the wooden one of Lincolnshire, she beats up the weft from right to left. A very long bench stands in front of the loom, on which the weaver sits. She slides along it till she is exactly in front of that part of the halter web which the weaving has reached.

A Louth rope-maker weaves his halter webbing on a flat loom built by himself, and similar to the kind used for weaving materials. The framework is rough and heavy; there are two sets of heddles; the fairly heavy batten has its reed made of thin metal blades bound with cords into place in a wooden frame; there are rollers at each end, on which to wind the warp and the finished webbing. This is woven in long strips, sometimes with coloured yarn worked in as a border or pattern. As this loom would not be suitable for weaving the short lengths needed for slip-halters, this man does not make that kind, but buys them from Yorkshire makers.

Hobbling for tying the legs of sheep to prevent them from straying is usually woven in long pieces. A West Riding roper uses an apparatus made on the principle of a loom. Two sets of heddles through which the warp is

threaded are hung in a wooden frame, and worked by treadles, the weft being threaded through on a bobbin.

Belly bands for heavy carts are woven of thick twine on an upright bar, a steel batten being used as the work is stiff and heavy.

Net-making is the least skilled branch of the ropery industry. Most net-makers buy machine-made cord. Netting needles are made of ash, generally by a local joiner, and should be thin and light. If the man is not used to making them, and not very intelligent, the resulting needles may be heavy and clumsy to work with.

The work is often done by the wife or daughter of the rope-maker, though on one occasion the roper himself did it, while he kept an eye on the spinning of a boy of sixteen. A good netter will be able to pick up a new pattern quickly, and to net hammocks and other unaccustomed articles at short notice. Ten to fifteen yards of sheep-netting can be made in an hour.

One end of the net is fastened to the wall, or an upright post. The worker holds a wooden gauge in his left hand, in the form of a thin wide block or frame to give the right size to each mesh. He winds the twine from the needle, a sort of bobbin loaded with twine and held in the right hand, once around the light frame in his left hand, knots it, and slips it off the frame. As the net increases in length it is hung up on hooks on the wall or post from which he is working.

Sheep nets are generally treated with tar, though occasionally even these, as well as pig and other nets, are sold untarred. One firm treats the cord in balls, boiling them in tar till they rise to the surface, they are then set to drain, and later turned, so that any surplus tar soaks back through the ball, and in this way not only is every part of the cord permeated but also every strand. If machine-balled cord has to be treated, the balls must first be hammered to 'shift' them, otherwise, as they are tightly wound, the tar will not penetrate. Steam-tarred cord can be bought, but is said to be inferior.

The general opinion, however, is that it is better to make nets of untarred cord and then dip them in the boiling tar. Making nets of tarred cord is dirty and heavy work and slow. One estimate was that a good netter could make six nets a day of tarred cord, but of untarred he could make nearly double the number. The thick top cords of a net are always added after tarring.

The canvas sheetings so frequently made up by ropers are sometimes sewn by hand, sometimes by machine. At Moreton-in-Marsh they had used a sewing machine for the purpose forty years ago, but to-day they have gone back to 'doing everything by hand. Many machine-sewn sheets made by others are brought to them to repair, because hand-sewing has been proved so much more satisfactory.

• On the other hand, the old firm at Canterbury which supplies all the hop growers, has had to use machinery in making up its canvas goods. The manager regretted the necessity, and spoke regretfully of the beautiful finish of the 'sails' or stack covers formerly made by hand. With the machine process the sail has to be done again in a year or so, whereas it used to last for many years, and even then all it needed was patching. Nevertheless, the speed of machine-sewing makes it essential for this work. In the old days a woman used to make fifty 'hop-pockets' by hand each day; now a man with a machine makes five hundred in the same time. In spite of high ideals of workmanship, the firm is unable to stand against the competition that such speed entails.

Labour

Few country rope-walks employ much labour. The largest firm in Yorkshire has six employees, and in the other cases from one to four workers are engaged. From one to four men, boys, or girls is usual in Lincolnshire, and in Gloucestershire only three girls and one man, the son of the employer, were engaged, besides a boy and girl apprentice employed on halters. Besides these a few casual men are employed in summer when tents are being sent out for agricultural shows or village entertainments.

In the fen district there are usually several men employed in each ropery; at St. Ives, as many as six men, with another branch shop at Ely, where only halters are woven. • In another district there were as many as twelve persons in one rope-walk—one man and two or three boys, and the rest girls, who sewed tents and covers. The man was the only one who could spin.

The Norwich walk employed one woman to sew covers, and one man; in the walk at King's Lynn there were three men and one or two boys.

The biggest country firm is at Hailsham, Sussex, where one hundred and fifty men and women are employed, there being in addition to eight rope-walks, large workshops

where tents and covers are made up and other branches of the work carried on, with the use of machinery. In making fishing-nets, large numbers are often employed, and a factory at Lowestoft where fifty-five girls were working, and where eighty were often to be found, is not unusually large. This, however, is hardly a rural industry.

Spinning is the most skilled process, and ropers often say that when a man can do this he knows all that he needs about rope-making. But even this has been done by a lad of sixteen, while a small girl of fourteen turned the wheel. The rope-maker guided them a bit, while making nets beside them. But in most cases spinners are old men, and they do not seem to be training any young ones. Yet for certain kinds of rope hand-spinning is necessary, and one old spinner had been asked to go to Belfast to teach some of the lads in a big rope-walk there.

From many parts of the country, Gloucestershire, Durham, and Yorkshire, the existence before the War of travelling spinners was heard of, but all except one roper spoke of the complete disappearance of this type of workman. They were skilled dressers and spinners who travelled from place to place, and could be taken on for short periods at busy times. They were single men and earned good wages, a spinner making 7*s.* or 8*s.* a day, according to one estimate: lodging was sometimes provided by the employer. During the summer they would seem to have supported themselves by various kinds of casual labour, possibly becoming at times the 'casualty' men who were sent out by the ropers to help put up tents.

According to most ropers, there are none of these men about now, and skilled workmen are rare, so the roper must do his best to keep employed through the slack season the number of men he will require in the busiest times. One firm in the North Riding said that by varying the hours of work from forty-one hours per week at slack times to fifty-two at the busiest time, they were able to keep all the men employed throughout the year. The opinion of one roper that there are many journeymen on the road at present, and also a fair number of young men working in the industry, so that there should be a supply of skilled labour if the industry extends, was not borne out by others; the latter part of the statement, however, bears more relation to the facts as witnessed by the investigators than the first part.

Apprenticeship

Anything formal in the way of apprenticeship to roping is very rare. Boys are often found working in a rope-walk, but they are seldom termed apprentices, and often leave after a year or two. If they like the trade and are satisfied with the work and earnings, they stay on. The two boys at King's Lynn were described as 'not exactly apprentices, but learning the job'. In Yorkshire, there were two boys of eighteen employed by different firms; in neither case were they apprenticed, but they were evidently picking up the more skilled work by degrees. Several firms each employed a boy who seemed to be learning the craft; in one walk, besides six men, there were three boys of about seventeen, but the employer said they only turned the wheels and did odd jobs, and would doubtless soon be off to work at one of the factories when trade was better. The latter is a frequent complaint; after a couple of years a boy can make himself very useful, but so often he is attracted away by other work.

There is no example left of the apprenticeship described by the old roper of Yarmouth. Thirty-five years ago he finished his 'seven-year articles' at the age of twenty-one. Towards the end of his time a boy got as wages about half what he really earned, his pay usually amounting to 10s. a week. The same rope-maker thought that conditions in the trade were now such that it would be folly to take on an apprentice. This he put down to the rates fixed by the Trade Boards, which make it unprofitable to train lads to the skilled work, because on reaching twenty-one they become entitled to the same wages as a middle-aged man, though they are neither so good nor so quick as he. Firms, therefore, employ several boys who 'pick it up'. They do the unskilled and semi-skilled work, and often leave after a few years. It is a bad state of affairs, but seems very general.

The Trade Boards

The owner of nearly every country rope-walk complains that the rates fixed for the trade are far too high for the industry. A boy on reaching twenty-one received 1s. 2½d. an hour in 1922, and might earn up to 1s. 6d. The working day was eight hours, and workers at Moreton-in-Marsh were said to be willing to work longer hours for lower rates now that times are hard.

In Bridport what had been paid for at 5s. before the War had risen to 28s. in 1921, and workers were due for another rise under the Trade Board scheme. An employer gave the average rise as 300 to 400 per cent. on pre-war rates, but this example shows a greater rise. Here, again, workers are said to be willing to take less in order to get more work. Pre-war wages at Bridport, according to another estimate, are said to have been 16s. to 18s. a week for men, whereas by 1921 they had risen to £3 per week, while hours had diminished from fifty-four to forty-eight per week. Although an increase on the former scale was long overdue, the extent of the rise during so short a period was such as to cause dislocation of the trade.

Another difficulty with regard to Trade Board rates is felt in country districts. The wages for all employees in the rope trade over the whole of England, whether town or country, are the same, and this is felt to be very hard on country districts where, it is said, the men do not need such high wages, as the cost of living is less than in towns, owing to lower rents, and where the employer is at a disadvantage, because of the carriage on his raw material.

When agricultural wages were 13s. a week before the War, a roper got £1 a week. This was considered a good ratio between the two, the extra skill of the rope-maker duly providing him with 1½d. an hour more than the agricultural labourer. But in 1923, when agricultural wages were 6d. an hour, a rope-maker got a minimum of 10d. an hour, and many of them got more. The 41s. 8d. of the roper for a fifty-hour week is out of all proportion to the 25s. of the farm labourer for the same hours.

Every roper speaks of the individual or local character of the rope industry, and how its conditions change from one district to another. A Berwick roper who was paying his men more than the Trade Board rate of wages, and therefore had no grievance on this score, spoke strongly of this, and of the irksomeness of regulations proceeding from a head-quarters where the conditions of the outposts are not understood.

Another strong argument heard against the Trade Board is the overlapping of several Boards, all of which control one or more parts of the trade, and none of which controls it to the exclusion of the rest. There are separate Boards for rope-makers, net-makers, sack-makers, and textile-workers, all of which have different rates, and therefore not only may different workers in the same room be under

different rates, a position that is a cause of annoyance to employees, but the same worker on the same day may be passed from one rate to another one or more times. This is fruitful of much trouble and annoyance to both worker and employer in small rural works.

Bridport is in a peculiar relation towards the Trade Boards. In very early days the trade was liable to much sweating. Parish apprentices were employed to turn the wheels for spinners from 4 a.m. to 9 p.m. Even just before the War, agricultural wages in Dorset were only 12s. a week, and the 'braiding' or net-making by hand, which goes on so extensively here and gives the trade its peculiar position, was done very largely by labourers' wives and children. The supplementary income which it was possible for the family to obtain was no more than a subsidy to agricultural wages. It is said that manufacturers and farmers in the past vied with each other in keeping down the cost of labour in the district. Out-braiders were forbidden by farmers to do any netting during hay and corn harvest, on pain of eviction. Much female labour was employed at these times in the fields. Moreover, the fact that quickly-made fortunes were not unknown among ropers at Bridport made the establishment of a Trade Board necessary to protect the badly organized workers from exploitation. This, however, is a reference to darker days.

The twine for the braiders is taken out to the cottages from Bridport by motor or sent by carrier, a fortnight usually being allowed before it is collected and more twine given out. It is measured in 'knots' and 'rans', ten 'knots' going to a 'ran', and payment is by the latter. There are said to have been eight hundred to a thousand out-braiders or netters within twenty miles of Bridport before the present trade depression began.

It was partly the competition with machine production that made wages low. Before the War 2*d.* an hour was the most that a fast out-braider could earn. Perhaps the trade resembles that of lace-makers, also a badly paid one, in that the children of a former generation, who did not go to school and spent most of their childhood over their pillows, may have been able to work faster and earn more than the present workers. After the War wages rose considerably, but did not reach Trade Board level. In 1919 the Trade Board was established, and, as a concession to a backward district, Bridport was granted a lower rate than the rest of England for eighteen months. It was to be raised

in three stages until the rates reached the standard level. Already by the time the first rise came, the temporary trade boom was over, and at each rise unemployment increased. The third rise was due in April 1921, but there was little chance of the workers gaining any advantage thereby, for work was short. Factory workers were receiving unemployment benefit, but out-workers were not eligible for this, and much privation was being endured. Although the women do not often support themselves entirely by 'braiding', such cases exist, and there are even some where out-workers have others dependent upon them.

There is a great deal of feeling among workers against the Boards, for they attribute the slump in trade to their action. In certain cases, owing to the lack of understanding of technical difficulties, the rates have been raised even higher than the average required by the Trade Boards. Piece rates for braiding are fixed according to (1) the size of the mesh, (2) the number of threads in the twine used. The second basis is false; it is the thickness of twine that affects pace and not the number of strands.

A Yarmouth employer who had agreed with his men for 1s. per hour in 1921 was required by the Trade Board to raise this rate to 1s. 3d. Instead of the seven men he had been employing he can now only afford three. Sometimes a mother in the neighbourhood would come to him and beg him to take on her boy, no matter how little he paid him, just to keep the boy busy and prevent him from bothering in the house. But under the Trade Board this is impossible. In this shop instead of the seven men, several boys, and five women out-workers, there are three men, one boy, and no women. This may not be wholly due to the effect of the Trade Board, for the rates fixed by the Board apply to net works, and all shops are equally affected. The diminution in employment has also been due to lack of demand.

In Bridport, though a few out-workers had been able to get work steadily, the motors which used to take out the work were not running with any regularity in 1922. Some braiders had work taken out by carriers at their own expense.

Before the days of Trade Boards, trawl nets were made by the small ropery in Yarmouth. About six a week used to be turned out at the time. The trawl twine for one net takes ten days to make, and the netting of it another month. Here, as in Bridport, the netting is always out-work. The pre-war rate was 8s. to 10s. for a 'piece', that is to say, one net. Working six hours a day it would take

a fortnight to do a 'piece', but as the workers are married women with many household duties to perform, it usually takes them a month. In 1923 for a 'piece' of net seventy yards long 26s. was the rate which would be accepted by both workers and employers, but the Trade Board rate was about twice as much, though the employer did not know exactly, as it was reckoned on a unit with which he was not familiar. This illustrates another difficulty arising out of the local nature of the industry, for different districts may have their own units of work and payment and be unused to those of other places.

The bitterness felt in Yarmouth and Bridport is due to braiders or net-makers having been included within the scope of the Board. The grievance in Lowestoft is that 'beatsters' or net-menders have not. A large factory in Lowestoft makes nets by machinery, and another employs many women on the premises braiding them by hand. All these come under the Board. On the other hand, the owners of fishing smacks employ large numbers of girls in 'lofts' or workrooms mending the nets of the fishing boats, and these girls do not. Every boat-owner can keep ten girls busy in this way, and there are said to be over two thousand girls in Lowestoft employed on this work. Owing to the lower rates of pay, employers are able to develop a business connected with net-mending that the factories would gladly have. Fishing-nets, when beyond repair for their original purpose, can be mended and sold for garden nets, for enclosing tennis courts, and other similar uses. This has become a profitable little business for owners of fishing smacks and causes great annoyance to factory employers who are unable to compete because they would have to pay higher wages for the same work.

Again, when women braid nets at home for the smack-owners, factory employers consider that they are paid very low rates, and if the purpose of the Trade Board is to improve general conditions, it is bad policy to exclude from its scope just those net-makers most open to the possibilities of sweating. Girls in factories braid trawl nets or seine nets by hand for $6\frac{3}{4}d.$ or $6\frac{1}{2}d.$ an hour. This rate, for a forty-eight-hour week, brings 26s. a week, nor is it any too much. Those who work at home get 15s. or 16s. a week for it, about 10s. a week less than their sisters and friends who do identical work within factory walls. These are some of the dissatisfactions caused by the Trade Boards' regulation of labour.

Types of Organization of Businesses

Roperies, being old and long established, tend to be family industries in which the workers engaged consist of a father with one or two sons. Daughters and wives often help with net-making in the busy season. In about half the firms in Lincolnshire, as well as in many of those in Gloucestershire, Nottinghamshire, and the north, all the work was done by a man and his son or sons. There seems to be a greater tendency in this than in the basket-making industry for the son to learn the father's craft.

The net- and rope-maker generally keeps a small shop in which he sells twine, baskets, brushes, oil-skins and mackintoshes, lino, and, in one case, even carpets, as well as his own produce. Several of the smaller ones say that without the shop there would not be a living for them in ropery.

One rope-maker met with was also a saddler and two were farmers or smallholders. There was only one roper found in Lincolnshire who depended entirely on the output of his workshop for his livelihood. He had formerly worked for a Louth firm, but three years ago he and his son started on their own account. He has made his workroom in one of the buildings where 'Louth Carpets' were formerly woven on hand looms, and he has no shop.

Unions and Associations

There is no special Union for the rope-maker's trade. In the country the Agricultural Labourers' Union, in London the Dockers' Union, are among those particularly mentioned, and many employees, more especially the women in Bridport, are in the National Union of General Workers. This large number of Unions causes trouble on the Trade Boards, and it would be much better for employees to be represented by one organization, if possible, in order to get proper representation of their large numbers on the Boards. Members of Trade Unions refuse to sit on the Board with non-union members.

The Employers are united in the Rope, Twine, and Net-Makers' Federation. It is made up of :

The British Hemp Rope Manufacturers' Association.

The Grimsby Net Manufacturers' Association.

The Cotton Twine Manufacturers' Association.

The Twine Manufacturers' Association.

The Scottish Net Manufacturers' Association.

- The Binder Twine Association.
- The Bridport Manufacturers' Association.
- The Hemp and Tow Spinners' Association.
- The Western Counties Twine and Rope Manufacturers' Association.

Markets

The ropes, halters, and nets of every district are sold almost entirely to local farmers. Nearly all ropers retail their ropes in a small shop, but where the small country rope-walk has a really flourishing trade the products are sold chiefly in the cattle and corn markets.

Ropers very frequently attend markets in other towns in which they have regular stands. Although practically all ropers are still manufacturers, and the majority still carry on manual processes, the general industrial and commercial conditions of the trade have compelled them to become merchants of factory-made articles as well as manufacturers. Industrial evolution, in this case as in many others, has caused a new form of specialization of the small shop. It has made the small ropers specialists in the production of small articles requiring special qualities which the factory cannot manufacture in small quantities at a profit, and, at the same time, has made them merchants of the general commercial articles either on a wholesale or a retail scale.

A number of rope-makers send goods by motor-van to a wider range of markets than they could reach before, and are able to supply a fairly large district and keep several men steadily employed by going far afield.

At the opposite end of the scale from the motor-van is the case of an elderly man in Derbyshire. He carries his ropes on foot to all the outlying farms of the district, 'Else how would they get them?' he asks.

The various forms of the rope industry are carried on at definite seasons. Malting ropes are made in winter, cart ropes and halters in summer, reins and household ropes all the year round. Early summer is the slackest time, but roperies get busier as hay and corn harvest approaches, when, besides the demand for new ropes, the farmers bring in all their repairs at the last moment to be done in a rush. November, when the sheep go on the turnips, and all through the winter, is the busy time for sheep nets, particularly January and February. In the latter month comes the demand for plough ropes. In fact, from October to March when the nets are most in use is the busiest time for the

whole industry when net-making forms a part of it, but in summer also there is a good deal of work on the repair of binder canvases, and the making up and repair of stack covers.

One or two rather special and unexpected markets were discovered in the course of investigation. The largest of these, those offered by the Navy and by Trinity House, are supplied by one of the rope-walks at Hailsham. Other ropers who supply shipping of a sort are those situated at Stoke Bruerne and Boxmoor, on the banks of the Grand Junction Canal, who make ropes for use on the canal boats. Two rather unusual markets are supplied by the enterprising rope-walk of Haverhill. It furnishes tow to the gloving industry of Charlbury and Woodstock, where it is used for lining a cheap glove; horsehair rope from Haverhill goes also to High Wycombe.

With these few exceptions the markets for agricultural rope, the kind chiefly made in country rope-walks, are local.

Conditions and Prospects

Within the last thirty years a number of small country rope-walks have disappeared. A firm in Whitehaven, Cumberland, which stopped making rope about thirty years ago, is still situated in Roper Street, but now only deals in rope, and a man at Harrington, farther up the coast, who also deals in ropes and similar goods, stopped manufacture at least fifteen years ago. Even at the inland town of Penrith, where there used to be four walks, there is now but one, and the sons of this roper have all turned to other trades, for though there is still enough work left to support the old roper it is continually dropping away, and there is no future in it here for a young man. Rope-walks at Darlington, Thirsk, and Yarm are now unused, and those at March, Chatteris, and Middleton (Northamptonshire) have ceased work within the last few years. At Kessingland, near Lowestoft, and all up this coast, there were small rope-walks, but now all the work is done by machinery in Port Glasgow and sold through big branches of the works there, which establish themselves at Yarmouth, Lowestoft, King's Lynn, and other places where there is shipping. It is easy to see how such big businesses killed the little ones, for even fifty years ago the small rope-makers were selling rope at 2s. a pound which the big manufactory could sell at 7d. and yet make a good profit out of it. In the Black Swan yard at

Liverpool there used to be five hundred hands employed on shipping ropes and sails, and even now there are said to be two hundred, although these are nearly all machine-made to-day. Other roperies, for example, at Hexham (Northumberland) and Norwich, ceased work during or just after the War. Hexham now buys machine-made rope and cuts it into lengths for farmers. The two Norwich firms, who also deal in ropes but no longer make any, hung on till March 1922, at which point, they say, the Trade Board regulations finally killed their industry.

There are certain articles for which there used to be a great demand, which are no longer required. Horsehair ropes have largely been driven from the market by the high prices. In Gloucestershire, where they were largely used for foddering cords, jute ropes for the same purpose cost 1s. each, whereas horsehair are 2s., and have had to give way to the cheaper article. Cider cloths were largely made at one time in the same district, but are no longer to be found. At that time they were 6s. apiece; now, if they were made, they would cost 18s., and there is no demand at this figure.

Mill-spun yarn, coming sometimes from the United States of America, but chiefly from mills in Hull, Leeds, and Dundee, has often displaced hand-made yarn. The cost of rope made from hand-spun yarn is very high. Raw hemp is bulky, and a great deal of waste which the small spinner cannot use economically comes out in the dressing; the high freightage in proportion to the amount of material that can be used raises the price, and, in addition to the time taken in spinning, the dressing of hemp by hand is a very slow process. Yet part of the strength of hand-spun yarn is due to the hand-dressing which has removed all the short pieces of tow, whereas machines spin up the long and short together.

But besides having desirable qualities, hand-spun yarn is still essential for certain purposes, and it seems unlikely that plough-lines and other short lengths of rope will be made in factories so well or so economically as by hand for a long time to come. Other purposes for which it must be used are driving-ropes (belting) for machinery, for sash-cords and clock-cords, and for those which hold the 'silt' used for sifting flour in a mill. In the Cambridge ropery part of the first Atlantic cable was made, for which all the yarn had to be hand-spun, and where ropes must be 'backways spun' this must always be done by hand.

Hand-spinning declined to a certain extent during the War owing to the shortage of labour and the difficulty of obtaining Russian hemp. Some of the old spinners were reluctant to experiment with Italian or Indian, in the spinning of which they were not experienced. At times there was difficulty in obtaining hemp at all, as the big mills bought up all the supplies, and small roperies developed the habit of buying mill-spun yarn, the use of which they sometimes continued after the War. Russian hemp was again obtainable in 1922, and all who had any special trade, such as those who made bell ropes or cellar ropes for breweries, had gone back to hand-spinning. The cheapness of mill-spun yarn (it can be bought for the same price as the raw material necessary to make it, when this is bought in very small quantities), and the high price of labour, have led many roperies to continue the use of mill-spun yarn where before the War they had spinners.

Some old rope-makers still maintain that there is nothing to equal hand-spun yarn; others say that the feeling against mill-spun yarn is only prejudice due to the fact that the machine can spin up anything, including waste swept from the floor of a hemp-dressing room, so that although the cheapest quality of mill-spun yarn is poorer than anything which can be spun by hand, the best kinds of the former are quite as good as the latter.

It will be seen that the amount of hand-spinning now done is very much a matter of the individual roper's tastes and opinions. On the whole it tends to be done less and less by the larger firms run more on factory lines and employing more hands, though even with them there are some, such as the one at Haverhill, which rely for the quality of their rope on this process. Nearly all older ropers are inclined to keep it up, but it is noticeable that few boys are being taught to spin. The one man who maintained that it is cheaper employs no one, being helped by his son, and it is clear that the only sense in which it could be cheaper is that it may entail less outlay of capital.

An experienced worker claims that he can spin twelve hundred yards in an hour, or four miles a day, whilst in a factory one machine tended by one person will spin twelve thousand yards an hour. When it is recalled that spinning is a skilled craft, and also that the hand-spinner can only use the longer fibres whereas the machine can spin up inferior material, it will be seen that from the point of view of cheapness of production hand-spinning cannot compete

with the factory process. It is a struggle between quality and price, in which the hand-spinning can only win where strength is not merely a desirable but an essential attribute.

The proprietor of nearly every large rope-making works will say that the hand-made rope industry has been dead for fifty years. Of the very small number of walks left, he adds that a few years will see the end. From the point of view of big-scale industries employing hundreds of men and selling ropes by the mile, the actual amount of material turned out by the small walks naturally seem inconsiderable. But the question is one of proportion, and the impression of the trade left after visits to many small roperies is very different from that which the factories try to give. The chief demand for hand-made ropes in every district comes from farmers. Graduated plough-lines, i. e. tapered, can only be made by hand, and the same is true of short lengths with 'blind ends', that is to say finished with looped strands; if short pieces are cut from a length of machine-made rope, the ends are, of course, simply loose strands, and no matter what is done to them they tend to fray out. On the whole, opinion is that machine-made rope does not seem to be an immediate menace to the hand-rope industry, as many farmers are willing to pay the higher price which must be demanded for the hand-made—though the opposite opinion is also expressed. Sometimes, when a roper reports that his business has been declining steadily for many years and that he is gradually giving it up and getting other work, another firm is to be found in the same town, perhaps in a more advantageous position in the main street, and often of a more enterprising nature.

As regards the sale of products of the small ropery, the question of a shop on a good central site is an important one, for a certain sort of farmer, though he really knows the superiority of hand-made rope, will often buy the machine-made kind because it is sold by the ironmonger or other tradesman to whom he happens to go, and he can buy it at the same moment when he is buying other things. For the hand-made he must go to the roper himself. Although there are some advantages in being in a market town, there is also the drawback that there are more shops which stock factory-made ropes and halters. A roper in the village of Binbrook (Lincolnshire), 'the metropolis of the Wolds', which is eight miles from any railway station, who has to have all his raw materials brought by horse-carrier from Grimsby, eleven miles distant, seems to do as good a business

as many makers in towns, this being the centre of a large sheep-farming district. There is reason to suppose that a steady and reliable demand for rope made by hand will always be found in country places where the agricultural interest is strong.

The district where sheep nets are most extensively made and used is Lincolnshire, and in certain parts of it there is even a system of hiring them. This is chiefly the custom in the east of the Lindsey division, towards the fen district where the farms are smaller. The farmers there have turnip crops only enough to feed their sheep for a few weeks, and do not consider it worth their while to buy nets. Thus the net-makers in Louth, Wragby, and Horncastle let out most of their nets on hire.

The net-making industry is an uncertain one, being dependent on the turnip crop; owing to the failure of this in 1921, two hundred nets were left on the hands of one net-maker at the end of the winter of 1921-2.

In spite of these risks, however, the net- and rope-making industry seems to thrive in Lindsey, both in the market towns such as Lincoln, Brigg, Louth, and Horncastle, and in the less important centres, Kirton Lindsey, Wragby, Binbrook, and Ulceby. The farmer nearly always gets his nets direct from the maker, so that it is of the first importance that the latter should keep up a high standard of quality. Some of the Lincolnshire netters have inspired their customers with such confidence that the latter, moving to the most distant parts of England and even to the Colonies, have sometimes continued to send home for their sheep nets.

Country rope-walks in every district make halters, some of them supplying large firms in towns, but most of them having as their main market the farmers of the district. The cheap factory-made halters are often bought by farmers when they sell an animal and have to give a halter with it, but they always prefer the hand-made one for their own use. It is in the making of halters that the overlapping of the Trade Boards is felt to be most trying. The rates of four Boards—the Jute Board, the Flax and Hemp Board, the Rope, Twine, and Net Board, and the Made-up Textiles Board¹—operate in the making of this one small article,

¹ The scope of these Boards is approximately as follows:

Jute Trade Board covers the preparing, spinning, or weaving of jute and any other fibre except flax or hemp, and the packing, dispatching, warehousing and storing, and other operations incidental thereto, or appertaining to any of the above-mentioned work.

Flax and Hemp Trade Board covers the preparing, spinning, and weaving

and there is even one process known as 'eyeing' which is not covered by any Board. Different rates of pay operate in each case and are a great care and worry to the small roper. This question of overlapping of function is one of the main reasons why the Employers' Federation considers that the scope of the Boards, a question now settled by the Ministry of Labour, should be decided by the trade. When the Trade Boards were established in 1919 they created a great deal of opposition. In this old and dignified trade where, particularly in country districts, it would be impossible for business to continue satisfactorily for several hundred years, as it often has done, unless the relations between work-people and employers had been amicable and in accordance with local conditions, the employers felt that the length of time during which firms had carried on their trade showed that such measure was unnecessary for them. As an official of the Rope, Twine, and Net Manufacturers' Federation has pointed out, the motto of the early Ropers' Guild was 'Let hemp bind those whom honour wont'. 'So you can imagine what we felt when we had a Trade Board put on us.

In criticizing the action of the Trade Boards, the other view must also be taken into account. In spite of the Bridport ropers' motto, the labour conditions of the district are said to have been deplorable in the past, particularly among out-workers engaged in making nets. The effects of bad labour conditions last a long time, and complicate all questions of wages and output: yet districts where there have been such conditions stand in greatest need of help from some outside body such as a Trade Board.

Two employers spoke extremely highly of the Trade Board, saying that to all good employers it was very acceptable, as it put competition on a fair basis, and that its effects

of scutched flax and hemp, a mixture of scutched flax and any other fibre, and of a mixture of hemp and any other fibre, including waste, and the packing, dispatching, warehousing, storing, and other operations incidental to any of the above-named work.

Rope, Twine, and Net Board covers the making or re-making of rope, cord, lines, twine, lanyards, nets, and the bleaching, teasing, hackling, carding, preparing, and spinning of the materials required for the making or re-making of any of the articles above mentioned when carried on in the same factory or workshop as such making or re-making and the mending of nets, as specified.

The first two Boards deal with specified fibre, whilst the third one deals with processes. Many of these operations are excluded when incidental to or carried on in association with or in conjunction with defined operations which come under the *Made-up Textiles Board*.

There is also a *Sack and Bag Board*.

were excellent in the prevention of sweated labour. The whole question of Trade Boards is fraught with difficulty, and is not one to be settled by those outside the trade on partial evidence.

Many country rope-walks seem to be in a flourishing condition and to have fairly good prospects for the future. Where this is not so it is often due to some unusual conditions. In some districts there is a tendency to bring up sons to other trades, but in one instance a son, formerly working in a big cabinet-making firm, is now glad to return as an unskilled hand to his father's ropery. A roper at Newark could easily find the market for his stuff if he could only get more skilled labour to make it: this is a lack felt in several districts. Where the skilled men are only wanted at special seasons the difficulty is particularly felt, and the disappearance of the travelling roper has made it worse.

In certain districts the industry is undoubtedly flagging. Although net-making is in a flourishing condition in the sheep-rearing districts of Lincolnshire, in the Holland division, where there is no demand for nets, the old rope-walks have either been closed or converted into rope and twine factories. At Crowle, in the Isle of Axholme, where agricultural conditions somewhat resemble those of the Holland division, a former rope-maker has become a dealer in cake and seed and chemical manure, and another, in Spilby, in the south-eastern corner of Lindsey, has done the same thing. One makes a few ropes, and the other makes nets occasionally as a side-line. Where a district becomes industrialized, as Barton-on-Humber, the ropers naturally take a despondent view of the future of their industry, as small ropers depend on the agricultural demand. One or two of the special markets are narrowing; many ropes for canal use are now factory-made, also the number of boats on the canals is decreasing, motors having largely superseded canal transport for the shorter distances. Cotton boat-lines, by which the horses tow the barges, have now come into use, and one roper said big firms will not sell cotton yarn, but only the finished rope.

The gradual decrease in the use of horses and growth of factories caused some of the small walks to die out even before the War, and labour troubles later contributed to the extinction of others.

To be set against all these instances of decline or failure in the trade are many others which show the opposite aspect. During the War the increased demand for rope and nets caused rapid extension, and several small walks grew

to firms of some size, especially if they were able to get the lucrative Government contract work. Sometimes, when only one out of four walks survives, as in Peterborough, the one becomes more flourishing than any of the four had been for some time. The small places that look rather skabby have often a sounder financial basis than big dealers. The proprietor of one such business boasted that it had never been bankrupt, while this had occurred once at least to large dealers in ropes in the same town.

One or two small ropers would be able to extend their businesses and feel confident of obtaining a large market if they could get the capital for certain improvements. All the processes are done by hand in the small ropery, and where capital is needed in such an establishment, it is to buy appliances which would take certain mechanical tasks from the human beings employed in the trade. The wheel that does the twisting and turning so constantly required in a rope-walk ought to be turned by power. It would not alter the process, but would save time and prevent the firm from having to rely on the uncertain supply of boy labour.

The question of training is an important one for the future, and this is sometimes realized by the owners of big factories better than by the proprietors of small walks.

Like every other trade, ropery is undoubtedly passing through a difficult period, and the country walk reflects the depression in agriculture on which it depends. For ordinary industrial uses the cheaper factory products have entirely ousted the small rope-walk. Moreover, in the large seaports where shipping is the main market, and huge dock-ropes must be twisted by machinery, hand-made rope has no future. Although from the point of view of the latter it may be said of such centres that 'the spiders spin cables where hempen ropes were', this is untrue of country districts where the market is agricultural. It cannot be denied that the spiders do a good deal of spinning in some of the dusty old sheds where rope is made in country villages, but the men are equally busy with it, and they occupy the centre of the floor. The application of suitable power and machinery will keep very small rope-walks in existence, providing valuable employment and supplying special local needs. And in their own special lines of production these small industries need not fear competition if they are supplied with skilled workers and managed with due regard to the general industrial and commercial conditions of the trade.

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